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12 MARCH 1987

## Worldwide Report

# TELECOMMUNICATIONS POLICY, RESEARCH, AND DEVELOPMENT

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12 MARCH 1987

WORLDWIDE REPORT  
TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT

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TELCO UNVEILS WIDEBAND RANGE OF SERVICES

Hong Kong SOUTH CHINA MORNING POST in English 24 Dec 86 p 24

[Article by Peter Robinson]

[Text]

HONGKONG Telephone yesterday unveiled a number of "wideband interactive" services it hopes to introduce to homes soon and said it aimed to reduce its involvement in its cable television operating consortium.

The optical fibre-based wideband network will offer a wide range of new services, including cable television.

Other screen-based interactive services displayed yesterday included banking, shopping, opinion polls, education, electronic mail, electronic surveillance and video conferencing.

However, these services are potential rather than actual although Hongkong Telephone (Telco) is talking to a number of third parties interested in developing the services.

Telco has opened a showroom in Exchange Square to promote the wideband services.

Corporate marketing manager Mr John York Williams is involved in discussions with banks interested in providing home banking services.

He said the Hongkong Bank already provided a service - Hexagon - but only to business customers.

Telco had also talked to the Open University network

about providing a service in Hongkong.

An interactive service would be especially useful in the education field because students could work at their own pace.

Mr York Williams also said Telco intended to further reduce its stake in the consortium, Cable Television Hongkong, which is bidding for a licence to provide programs for cable television.

At present Telco has a 40 per cent stake with Swire, Golden Harvest and Edko taking the rest.

Mr York Williams would not say whether new shareholders would be brought in or whether existing shareholders would increase their stake.

Telco has always made it clear it wishes to play a subsidiary role in programming, placing its main emphasis on providing a wideband network.

The Government has yet to make a decision on who will operate a cable television service on the wideband network.

However, Telco is ploughing ahead in marketing its other wideband services.

Mr York Williams said regardless of whether its consortium was granted a cable television licence it would be

going ahead with its other wideband services.

He said if the Government granted a cable television licence to another operator it could use its network.

However, another favourite to win a licence, Hutchison CableVision, has made it clear it wants to provide a service on its own network.

Last week British Telecom, which is part of the Hutchison consortium, criticised Telco for operating a monopoly in telecommunications.

Yesterday, Telco's managing director, Mr Mike Gale, countered that anyone was free to provide services on its network provided they had a licence from the Government.

He pointed out that Hutchison and China Telecom used Telco's phone network for their cellular radio systems.

Telco had opposed the granting of these licences and was over-ruled by the Government.

Telco already has a limited wideband service operating.

A television link is provided between Happy Valley and Sha Tin racecourses.

Mr York Williams said Telco started putting a wideband optical fibre network in place as early as 1981.

/9317

CSO: 5550/0084

NO LAW AGAINST FOREIGN HOLDING OF TELEVISION STATIONS

Hong Kong HONGKONG STANDARD in English 24 Jan 87 pp 1, 3

[Text]

THE Government body that regulates electronic media here says it is powerless to prevent two Australian magnates from taking control of Hongkong's two television stations.

Mr John Wan, a senior administrative officer with the Television and Entertainment Licensing Authority, was responding to concern over reports that Australian news magnate Rupert Murdoch intended to buy controlling interest in ATV.

"We have a very comprehensive set of laws. So long as the two stations do not contravene any of these laws they are free to do as they like," Mr Wan said.

He explained that the law specified that major shareholders of television stations here had to be Hongkong residents.

But for foreigners to control more than 51 percent of TV stations, approval must be sought from the Executive Council, he said.

Observers, however, noted that in a publicly-owned company the single largest shareholder could own less than 51 percent of the shares and still gain effective control through a sway over other shareholders.

Asked if the Government would consider changing the law to deal with the current situation, Mr Wan replied: "We feel the law is adequate."

Bond Corporation International already owns 23.77 percent of HK-TVB, making the company, headed by Australian Alan Bond, the single largest shareholder of Hongkong's major television station.

Among those concerned over the possibility of Mr Bond and Mr Murdoch controlling Hongkong's two television stations was Dr Leonard Chu, the head of the journalism and communications department of the Chinese University.

Dr Chu urged the Government to take a closer look at the situation to ensure that the television stations here were not lost to foreign control.

"It is very important that any community have control over its electronic media. Most countries have controls to prevent foreign ownership of their airwaves. I feel Hongkong should do the same," said Dr Chu.

"I'd feel very uncomfortable if Rupert Murdoch got even part control of ATV, especially now that he has controlling shares in the *South China Morning Post*," Dr Chu added.

Dr Chu felt that having control over the print media was not as bad as having control over the electronic media, "because we cannot deny the influence of the electronic media here".

Professor Lam Yat-wah, also from the Chinese University and a member of the disband'd Broadcasting Review Board said that it was Government responsibility to insure against total foreign control of local TV.

"I think the government is very conscious of the impact of these buying moves, but it is up to them to decide whether or not it is good for the territory," he said.

However, Prof Lam conceded that because Hongkong had a free-trade policy, where shares were available without restriction, he did not think there was much the Government could do.

CABLE AND WIRELESS AGAINST COMMERCIAL 'POACHING'

Hong Kong HONGKONG STANDARD in English 24 Jan 87 p 3

[Text]

CABLE and Wireless Ltd, Hongkong's sole provider of tele-communications links with the outside world, made it clear yesterday it will oppose individuals or companies picking up satellite television signals for commercial use.

But its Managing Director, Greg Crew, said his company will not object if signals are picked up for individual entertainment purposes only.

Mr Crew said the company had told the Government it objected to the proposal by the Kowloon Hotel to pick up satellite transmissions from its own rooftop dishes for the entertainment of its guests in the hotel's 740 rooms.

However, spokesman for Kowloon Hotel, Onno Poor-tier, was not available for comment yesterday.

But the hotel had said earlier that it wants to pick up a wide range of television programmes from the United States and Asia.

Other hotels have also indicated that they had similar plans in the event the Government gave the go-ahead.

Some individuals have been enjoying satellite TV for some years through their own home dishes without Government intervention.

Mr Crew's comments yesterday came after the revelation recently by a top official in charge of the matter that the Executive Council was expected to rule on the issue in three months' time.

The official, James So, who heads the Administrative Services and Information Branch, is also reported to have said that the Governor-in-Council might amend the licence issued to Cable and Wireless if it was necessary.

Mr So stopped short of saying if the Kowloon Hotel case would lead to an amendment of its licence.

The franchise held by Cable and Wireless, granted five years ago and which expires in 2006, covers all external tele-communications services including television transmission, telex, telephone and telegram.

Mr Crew said that in the company's view, an enormous investment had gone into the existing giant earth stations and other facilities to provide high-quality TV transmission.

He said the company was already responding to the new market by installing a fifth dish in Stanley to receive TV signals.

The company has an agreement with Ted Turner's US-based Cable News Network to provide 24-hour television news coverage to hotels.

The response so far has been good, he said.

Mr Crew was speaking after a 30-minute, two-way video conference in which seven Hongkong panelists discussed local developments in wideband communications with their counterparts in Honolulu via a satellite link-up.

The meeting was part of the four-day annual conference of the Pacific Telecommunications Council.

In their presentation, the local speakers concurred that Hongkong had one of the world's most extensive wideband urban networks in the 500 km fibre-optical cable owned by the Hongkong Telephone Co (Telco).

Corporate marketing manager of Telco, John York Williams, said the company started building the network five years ago to provide higher speed and volume transmission.

Services which the network can carry range from a telephone service, electronic mail service, viewdata to TV transmission of horse races, enabling people at Happy Valley to watch and place bets on races being run at Sha Tin.

/9317

CSO: 5550/0086

PEOPLE'S REPUBLIC OF CHINA

STATE COUNCILLOR SPEAKS ON SATELLITE COMMUNICATIONS

OW220149 Beijing XINHUA Domestic Service in Chinese 1134 GMT 21 Dec 86

[Report by reporter Yang Jigang]

[Text] Beijing, 21 Dec (XINHUA)--China has made significant development in transmitting TV programs via satellite since a year ago and will make similar progress in developing satellite communications and transmitting information data through satellite ground stations from now on, State Councillor Song Jian said at a national meeting on the application of satellite communications at selected points which opened in Beijing today.

Song Jian said: The work of transmitting TV programs via satellite has developed rapidly because the state is attaching great importance to it. The number of TV receiving stations has increased from 53 in autumn last year to more than 2,000 at present. A satellite ground station has started to transmit central educational programs in October as well as program No 1 of the Central Television Station. Starting in February next year, economic information programs, including agricultural science and technology and Spark Plan programs, will be added to it.

The 4-day meeting has been convened jointly by the offices of the Leading Group for the Development of Electronics Industry and the Satellite Communications Group under the State Council. More than 180 representatives from various provinces, municipalities, autonomous regions, and cities as well as concerned ministries and commissions of the central authorities attended the meeting. They will discuss and study how to promote the application of satellite communications technology in our country.

Vice Premier Li Peng of the State Council sent a special greeting letter to the meeting. He hoped that satellite communications will be extended from large cities to medium and small cities, remote cities, large plants and mining enterprises, and construction sites. He also hoped that satellites will play a diversified role, not only in transmitting TV programs but also in developing modern communications with greater, faster, better, and more economical results.



Song Jian pointed out: China has a big market for using satellite communications and information data. The various enterprises should make thorough investigations so as to promote the application of satellite communications.

He said: Satellite communications should serve the need of the various sectors of the national economy, of open cities in the coastal areas, and of township enterprises in the vast rural areas. In addition, we should train technical and management personnel.

Song Jian said: The central and local government departments concerned should cooperate with enterprises and carry out satellite communications work with joint funds. The governments at various levels should support enterprises and research institutes in designing and manufacturing satellite communications equipment. In addition, we should attach importance to importing up-to-date satellite communications technology and scientific management knowledge from abroad, and cooperate with foreign firms in manufacturing related products.

At today's meeting, Tang Bingwu, responsible person of the office of the State Council's Leading Group of the Development of Electronics Industry, explained our country's plan for developing satellite communications during the "Seventh 5-Year Plan."

/9604

CSO: 5500/4145

PEOPLE'S REPUBLIC OF CHINA

CCTV TO OPEN SECOND PROGRAM CHANNEL ON 1 FEB

HK261113 Hong Kong ZHONGGUO XINWEN SHE in Chinese 0230 GMT 26 Dec 86

[Report: "CCTV To Broadcast Nationwide Second Program Channel"]

[Text] Qingdao, 26 Dec (ZHONGGUO XINWEN SHE)--Beginning 1 February 1987, the CCTV [Chinese Central Television] will broadcast English programs for visiting foreigners and foreigners residing in China. This was announced by Nie Dajiang, vice minister of radio, cinema, and television, at the "CCTV Conference on Nationwide Broadcast in the Second Program Channel," which is being held in Qingdao.

Nie Dajiang said that some units have proposed the establishment of a commercial TV station, but since conditions are still not ripe, the CCTV has decided to open a second program channel so as to collect economic information from various areas and to satisfy the needs of economic development.

There will be four new programs in this channel, including "Economic Information," "Education in Agricultural Science and Technology," "The Spark of Science and Technology," and "English." The "English" program, including news, reports on special topics, movies, and TV dramas, will be aimed at foreigners in China.

It is planned that this channel will operate 13 hours a day. Apart from economic information, there will also be cultural, sports, science and technological information, and other knowledge and service programs. Thus, it may be able to make up for the defects of the first channel, which broadcasts only TV university courses in the morning and the afternoon.

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CSO: 5500/4145

PEOPLE'S REPUBLIC OF CHINA

POSTS, TELECOMMUNICATIONS MAKE PROGRESS IN 1986

OW302343 Beijing XINHUA in English 1450 GMT 30 Dec86

[Text] Beijing, 30 Dec (XINHUA)--China added 6,000 long-distance telephone lines this year, of which more than 1,000 link Beijing with Guangdong Province, an official from the Ministry of Posts and Telecommunications announced today.

"Over 110,000 telephones were installed this year in the capital cities of the nation's 29 provinces and autonomous regions," the official added.

"These additions, together with another 600 completed projects have helped ease the strain on China's communication service this year," he said.

A feature in China's telecommunication undertaking in the past year was the introduction of world-advanced technology on a wider scale, satellite telecommunication networks have linked Beijing with remote areas like Lhasa, Urumqi and Huhhot, and have opened up additional telegraph and telephone services.

Rapid development was also seen in digital communication technology, with 240,000 program-controlled telephone switchboards installed in 11 cities and telegraph service now available in 19 provincial capitals.

In addition, express special mail service is offered in 50 cities, and 10,000 customers in 20 cities have used the new customer-search service.

The ministry predicted posts and telecommunications business volume this year will top 3.2 billion yuan (U.S.\$865 million), which is an increase of 10 percent over last year.

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CSO: 5500/4144

PEOPLE'S REPUBLIC OF CHINA

OFFICIALS COMMENT ON DEVELOPING MODERN COMMUNICATIONS

HK041020 Beijing CHINA DAILY (BUSINESS WEEKLY Supplement) in English  
28 Jan 87 p 1

[Article by staff reporter Zhang Yu'an]

[Text] China's drive to improve its internal television links, and its data and voice transmission systems, is taking to the skies--and doing so with increasing amounts of domestically produced equipment.

The years up to 1990 will be China's best opportunity to develop small TVRO (television receive only) stations, voice stations and data communication stations throughout the country, say officials from China Broadcasting Satellite Corporation (CBSC).

CBSC was authorized by the State Council to coordinate the national effort to develop satellite transmission in 1983.

CBSC is in sole charge of China's satellite broadcasting development, planning, operation and international cooperation. It is willing to establish technological and business links with foreign companies over voice and data communications systems, Kan Kaili, technical advisor to CBSC, told BUSINESS WEEKLY.

China now has about 2,050 small TVRO stations for programs from Beijing. That number is expected to double by the end of this year. Before these stations were set up, people in remote areas had to rely on local stations or video tapes to watch Beijing's TV programs.

The government has presented 53 complete stations to economically backward areas as gifts. These [stations] disseminate the voice of the central government and educational programs more quickly, officials said.

Now 17 factories are technically capable of producing small TVRO stations. The reception quality of China-produced 3-meter dishes is up to general international levels. In the next few years, China will lay emphasis on the development of both 4.5 meter and smaller stations, Kan said.

Small data communication stations are urgently needed by many domestic users, such as the CAAC [Civil Aviation Administration of China], banks, XINHUA NEWS AGENCY, customs and the central ministries and departments.

The State has given satellite communication top strategic importance in the Seventh Five-Year Plan (1986-90). By the end of this year, a data communication system will be set up in Beijing operated by CBSC. The system will provide leased service to users throughout China, Kan said.

China has begun to do research on data communication equipment and in a few years will be able to produce it, but for now it still has to import, said Yin Baolai, vice president of CBSC.

A factory in Nanjing, Jiangsu Province, is cooperating with a foreign company to produce data communications equipment. Its original aim was to sell the products to foreign countries, but with the fast development of China's communication systems, the factory's products will also find buyers at home.

China's existing telecommunications are far from being able to meet the users' needs. Small voice stations (SVS) are much faster than telephone for long distance communication. CBSC is making great efforts to develop China's own SVS systems.

For now, China will use imported SVS equipment. But 13 types of SVS are under research and trial-use and soon China will be able to produce its own.

China has rented several transponders from Intelsat and will continue this policy for several years though it is planning to launch its own large capacity domestic satellite, Yin told BUSINESS WEEKLY.

To promote the development of communications and spread the use of modern communications, CBSC held an exhibition in Beijing to demonstrate modern satellite communication facilities at the end of last year.

/9604

CSO: 5500/4144

PEOPLE'S REPUBLIC OF CHINA

BRIEFS

RURAL BROADCASTING NETWORK--China's rural radio-TV network, which includes 2,226 radio stations in banners and counties, 50,614 in towns and townships, and some 12,000 TV relay stations, is accessible to 68 percent of the population. The development of such a network has enlarged the transmission area of programs provided by the central authorities, autonomous regions, provinces, and municipalities, thus narrowing the gap between government, party, and the masses. [Summary] [Beijing Domestic Service in Mandarin 1200 GMT 21 Nov 86] /9604

GUANGDONG RADIO, TELEVISION PROGRESS--A conference on management of key radio and television relay stations and microwave stations was held in Huidong County from 3 to 5 December. The meeting revealed that 70 percent of the province's population is now covered by wireless broadcasting and 80 percent is covered by television. In recent years, management of key relay stations and microwave stations has been improved, and rules and regulations have been strictly observed. As a result the quality of broadcasting has improved. Seventeen units and 18 individuals were commended at the meeting. [Summary] [Guangzhou Guangdong Provincial Service in Mandarin 1000 GMT 5 Dec 86] /9604

NEW GUANGDONG-HONG KONG TELECOMMUNICATIONS--Guangzhou, 5 Dec (ZHONGGUO XINWEN SHE)--The preparatory work for the building of the Guangdong-Hong Kong optical-fiber telecommunications system has been basically finished, and contracts for the purchase of British equipment have been signed today in Guangzhou. It has been learned that at present the government of Guangdong Province has decided to list this project as a key construction project in Guangdong next year and set up a special organization to coordinate the various works so as to ensure the completion of the work in the first half of 1988. The Guangdong-Hong Kong optical-fiber telecommunications system to be built next year will lay a 246-kilometer-long optical-fiber telecommunications cable starting in Guangzhou, passing through Dongguan, Huizhou and Shenzhen, and ending in Hong Kong, with 201 kilometers of cable in Guangdong Province. Involving a total investment of 30 million yuan, this project includes for China to Hong Kong communications systems, and each system has 1,920 audio frequencies. Following its completion in the first half of 1988, communications between the program-controlled telephone network and the shifting communications network in Zhujiang Delta and Hong Kong will be put through. Then telecommunications between Guangdong Province and Hong Kong will be greatly improved. [Text] [Hong Kong ZHONGGUO XINWEN SHE in Chinese 1321 GMT 5 Dec 86] /9604

TELEX LINES, SUBSCRIBERS INCREASED--Beijing, 7 Jan (XINHUA)--China now has 5,100 telex subscribers, a 39 percent increase over 1985, according to a recent issue of PEOPLE'S POSTS AND TELECOMMUNICATIONS NEWS. China opened 193 trunk lines last year, bringing the total number of subscriber's trunk line to 1,322. Fifty-four cities in China have telex exchanges, forming a national network of telex exchange, the paper said. Over the past year, new trunk lines were added in major cities such as Beijing, Shanghai, Tianjin and Guangzhou, the telex service capacity in Dalian, Qingdao, Hangzhou and Shenzhen was expanded and new telex exchanges were installed in Zhengzhou, Nantong and Hohhot in Inner Mongolia, Urumqi in Xinjiang, Guilin and Beijing in Guangxi. Telex concentrators were installed in Fushun of Liaoning Province, Wuhu of Anhui Province, Jilin in Jilin Province, Changzhou in Jiangsu, and Lhasa in the Tibet Autonomous Region, according to the paper. [Text] [Beijing XINHUA in English 0648 GMT 7 Jan 87] /9604

SATELLITE REPEATERS--Beijing, 8 Jan (XINHUA)--China has recently purchased another satellite repeater from the International Telecommunications Earth Satellite Organization. The first satellite repeater, purchased by China from the organization, was put into use 1 July 1986. The use of the second repeater will improve communications for Chinese rural and remote areas. [Text] [Beijing XINHUA in English 1111 GMT 8 Jan 87] /9604

CSO: 5500/4144

## U.S. PROPOSAL ON PUBLISHING, BROADCASTING TALKS CRITICIZED

## Mulroney Remarks

Toronto THE GLOBE AND MAIL in English 5 Feb 87 pp A1, A2

[Article by Ross Howard]

[Text]

## OTTAWA

Prime Minister Brian Mulroney lashed out yesterday at the chief U.S. trade ambassador for a "stunning ignorance of Canada" in his proposal that Canadian cultural industries such as publishing and broadcasting should be negotiated in the free-trade talks.

Mr. Mulroney told the House of Commons that the U.S. proposal, most recently repeated on Tuesday by Clayton Yeutter, is "completely insensitive and totally unacceptable to the Government of Canada."

Responding to New Democratic Party MP Lynn McDonald about Mr. Yeutter's remarks at a Washington conference, Mr. Mulroney said the Canadian position has been clear since the talks were first proposed: political sovereignty and social and cultural programs in Canada are simply "not at issue" in the negotiations.

Referring to speeches he has made in the past, Mr. Mulroney said, "That is my position. Culture is not up for grabs."

Mr. Mulroney said he had repeatedly conveyed the Canadian position to senior U.S. officials, including most recently Vice-President George Bush on his brief visit to Ottawa last month, and Mr. Yeutter's remarks may be merely a personal opinion.

Mr. Yeutter said all issues and

industries should be on the table.

"I'm prepared to have American culture on the table and to have it damaged by Canadian influence after a free-trade negotiation. I hope Canada's prepared to run that risk, too," Mr. Yeutter said on Tuesday. He later added he was referring to cultural industries with "an economic dimension."

Mr. Mulroney's brief but spirited defence of cultural sovereignty yesterday gave cause for applause among Conservative backbenchers, who have withered two weeks of opposition claims the Government's pursuit of free trade is producing a punishing series of Canadian surrenders or penalties in industries such as cedar shakes and shingles, softwood lumber and steel.

Responding to questions from Nelson Riis of the NDP about legislation before the U.S. Congress that would severely curb profitable exports of Canadian steel to the United States, Mr. Mulroney also told the House the legislation demonstrates why Canada needs a trade pact which would free Canada from such measures.



Toronto THE GLOBE AND MAIL in English 5 Feb 87 p S6

[Editorial]

[Text]

On the way to the free-trade altar there has been a good deal of pre-nuptial nervousness on Canada's part. Apart from a general dread of the unknown, anxiety attacks have been suffered by those with something specific to protect, something specific to take off the table. And from the very beginning voices have been heard wailing that it was a terrible mistake to attempt a mating between this little, weedy economy and that of the giant to the south.

Not everyone has joined in henny-peanying the enterprise. Donald Macdonald, whose Royal Commission on Canada's Economic Prospects endorsed the attempt to negotiate a comprehensive free-trade deal, is certainly not among those who fear the sky will fall or that we will all be killed in our beds. His report took the wind out of a number of nationalist sails by asserting: "It is probable that the most significant and long-term effect of free trade would be the strengthening of national unity... This act could be expected, in time, to contribute enormously to our national sense of Canada as a single community."

Having established his credentials as a vigorous advocate of trade talks, and an effective debunker of multi-colored argu-

ments to the contrary, Mr. Macdonald is entitled to a respectful hearing when he reports stubbing his toe on some aspect of the negotiations.

He draws the line at the tendency of negotiators or commentators on the U.S. side to dismiss summarily Canadian concern for the survival of its relatively vulnerable culture. He said on Tuesday, in Washington, that U.S. Trade Representative Clayton Yeutter and chief U.S. negotiator Peter Murphy were "maladroit in dealing with Canadian concerns."

In Mr. Yeutter's case, this is an exceptionally generous assessment. Even in a dialogue littered with fatuous remarks, his contribution stands out. Dismissing Canadian fears about being culturally overrun by the United States, he made this offer: "I'm prepared to have American culture on the table and have it damaged by Canadian influence after a free-trade negotiation. I hope Canada's prepared to run that risk, too."

Terrific. For fair and even-handed negotiations, there's nothing like a level playing field with a 10 to 1 gradient. The elephant will go into the ring against the mouse, provided they wear the same size boxing gloves. The eagle will risk being nibbled to death by the beaver.

It is curious that Mr. Yeutter should acknowledge that the cultural issue is "sensitive" for Canadians, while leaving the imprint of his hobnailed boots all over it. Representing the two cultures as being equally vulnerable to intrusion by the other is about as insensitive as it is possible to get. Mr. Yeutter must know that if the flow of cultural influence ran as powerfully in the opposite direction, the objection from the United States would be deafening.

Clearly, it doesn't, and the point was addressed in Mr. Macdonald's royal commission report. This noted that, within a free-trade deal, Canada could insist on explicit treaty provisions that would authorize public funding of its cultural activities and permit affirmative discrimination for Canadian producers to compensate for the handicap of our small domestic market. "The examples of the European Free Trade Association and the European Community demonstrate that substantial subsidization of cultural activities is possible within an effective free-trade framework."

Perhaps this is how it should be tackled by Canada and the United States. But if Mr. Yeutter has nothing better to offer than his latest inane remark, we should pack up the talks right now.

/9274

CSO; 5520/16

## ONTARIO TESTING NEW WEATHER RADAR SERVICE

Toronto THE GLOBE AND MAIL in English 6 Feb 87 p B16

[Article by Richard Hall]

[Text]

A new Telidon weather radar service is being tested by Ontario's Ministry of Transport and Communications.

Studies of weather information have shown that 20 per cent of storm and snow data is already out of date by the time it arrives. But if the ministry's videotex system is a success, its operations chiefs should be able to read, or print out, information from a screen that is updated every 20 minutes or so, instead of getting four to six weather Telexes a day.

The system provides detailed maps of local and regional areas. At a glance, supervisors can see which stretches of highway are weather-bound, with detailed information on whether the pavement is bare or damp, snow covered, icy, slushy or drifting with snow. A total of 10 kinds of data is provided, including wind speed and direction.

At the same time, they can identify where their units are sanding,

plowing, salting and in the yard — or, perhaps, missing.

By widening the focus, despatchers can see and follow storms approaching from the United States or other provinces.

Ontario has had inquiries about the service from Manitoba as well as Ohio, Illinois, New York and New Jersey. In addition, many provincial municipalities are eagerly awaiting the results of the tests.

One test site is the regional municipality of York. Debbie Miles, a dispatcher in Newmarket, Ont., said: "Here, we need to know how long emergency conditions will last rather than when they will arrive, so we can alert our subcontractors — sanders and plows — and let them know. Our own guys are on 24-hour alert in the season.

"But other agencies need to know well in advance to get their troops rolling."

The municipality is testing the new on-line system and finds it an improvement over its old equipment. Over a dedicated telephone line, the Telidon service gives up to

36 hours of warning about weather conditions and provides road reports, road closing data and estimates of the amount of snow.

Jeff Bond, the designer of the road weather information system, said "this is the final year of our two-year evaluation in York, Bancroft and Kingston. Our own yards are, of course, equipped with the system.

"If we go province-wide, we have 18 district offices in radio contact with 252 provincial patrol yards. Eventually, they would all be linked up. But beyond that, this interest from the states and other provinces means we are looking at a possible technology-export project."

Mr. Bond said use of RWIS could conceivably offset the ministry's \$105-million snow clearance outlay each year.

A study performed at the outset of the project, he said, found that "50 per cent of the \$96.5-million spent on winter maintenance was being eaten up in labor costs alone. So, accurate deployment was the issue — to save money."

/9274

CSO: 5520/17

DECISION PENDING ON BIDS IN TELEGLOBE SALE

Toronto THE GLOBE AND MAIL in English 14 Jan 87 pp B1, B2

[Article by Christopher Waddell]

[Text]

OTTAWA

A purchaser for Telelobe Canada may be announced within the next month following the receipt by the federal Government of several bids last week for the profitable Crown-owned telecommunications company.

Ian Sadinsky, a spokesman for Minister of State for Privatization Barbara McDougall, would only say yesterday that "more than one" bid was received, but it is understood that Ottawa may have obtained up to six offers to buy Telelobe, which has a monopoly on all overseas telecommunications and telephone traffic to and from Canada.

The bidders are believed to include Power Corp. of Montreal; a group of pension funds headed by the Caisse de Dépôt et Placement du Québec; Canadian Pacific Ltd. of Montreal; and two other bidders, one of which has proposed that within 18 months of acquiring Telelobe it will sell the company to the public through a share offering.

Telecom Canada, a consortium representing all the telephone companies in the country, has also apparently submitted a bid, suggesting it is still interested in

acquiring Telelobe, if none of the other offers prove acceptable to the federal Government.

In late December, Ottawa rejected a bid from Telecom Canada after it was given first chance at purchasing up to 40 per cent of Telelobe's shares. The federal Government was unwilling to accept the conditions placed by Telecom Canada on its bid — that it be allowed the opportunity of being the largest shareholder in Telelobe, and that it have an opportunity to withdraw its offer if a larger block of shares of Telelobe was acquired by a group deemed unacceptable to Telecom Canada.

Mr. Sadinsky said yesterday that the Government had been informed by Canada Development Investment Corp., the Crown-owned agency responsible for Telelobe, that several bids had been received. CDIC will analyze the proposals and then recommend a purchaser to the Government or perhaps suggest that none of the bids are suitable.

While noting that he expected things would "be moving along quickly", Mr. Sadinsky would not speculate on how long that process might take.

It is known, however, that Finance Minister Michael Wilson is anxious to get his hands on revenue from Teleglobe's sale to provide insurance in meeting his commitment that this year's deficit will not exceed \$32-billion. All revenue obtained by the Government in excess of Teleglobe's book value, estimated by federal officials at about \$400-million, can be applied directly against the deficit in the present fiscal year, which ends on March 31.

But Teleglobe may bring in less than the original estimates of up to \$600-million. Bidders are worried about the possible lack of participation by the telephone companies in a privatized Teleglobe.

Because the telephone companies now account for approximately 85 per cent of Teleglobe's business, if they are not involved in the ownership of the company, they may have little interest in using the services of Teleglobe.

Any attempt to bypass Teleglobe by sending telephone and telecommunications traffic overseas through the United States would have a serious impact on Teleglobe's revenue and profitability.

For the first nine months of 1986, Teleglobe reported a profit of \$45.6-million on revenue of \$588.8-million, compared with a profit of \$42.6-million on revenue of \$494.9-million a year earlier.

/9317

CSO: 5520/14

GERMAN DEMOCRATIC REPUBLIC

BRIEFS

MOSCOW HOSTS TV-RADIO MEETING--Moscow, 18 Feb (ADN)--A 2-day meeting of the heads of radio and television corporations in socialist countries and of the International Organization for Radio and Television (OIRT) ended in Moscow on Wednesday. In the course of an exchange of experiences, information was also provided about television and radio reporting that will mark the 70th anniversary of the Great October Socialist Revolution. The participants in the meeting, including Heinz Adameck and Achim Becker, chairmen of the GDR State Committees for Television and Radio, were received by Aleksandr Yakovlev, candidate member of the Politburo and secretary of the CPSU Central Committee. [Text] [East Berlin ADN International Service in German 1858 GMT 18 Feb 87 LD] /9738

TASS-ADN PROTOCOL SIGNED--Berlin, 18 Feb (TASS)--Today Joachim Herrmann, member of the Political Bureau, secretary of the Central Committee of the Socialist Unity Party of Germany (SUPC), received Sergey Losev, director-general of the NEWS AGENCY OF THE SOVIET UNION (TASS), who is visiting here. At the ADN news agency, talks on all-round expansion of cooperation between the two news agencies were held. Guenter Poetschke, ADN director general, and Sergey Losev signed a protocol on cooperation between the sports news services of TASS and ADN for 1987-1988. [Text] [Moscow TASS in English 1649 GMT 18 Feb 87 LD] /9738

CSO: 5500/020

ADVANCES IN SOFTWARE WRITING FOR TELEPROCESSING SWITCHING SYSTEMS

Warsaw PRZEGLAD TELEKOMUNIKACYJNY in Polish No 7, Jul 86 pp 195-196

[Editorial: "ECTT Software"]

[Text] In 1976, the Communications Institute was commissioned to develop a system of electronic telegraph plus remote data processing central offices currently identified by the acronym ECTT. In 1980, the Gdansk division of the institute completed development of a working model of such a station with a capacity of  $2 \times 256$  terminations. The technical features of this model and the anticipated applications in the Polish network of ECTT central offices are discussed in an article by Tadeusz Flisk and Ryszard Lewandowski, "Switching Problems of the Polish Telegraph Network," published in PRZEGLAD TELEKOMUNIKACYJNY, No 9-10, 1981. The working model of the ECTT central office and its software (that used in the Telex system) were in trial operation in the Polish public network from 1981 to 1984. The model underwent comprehensive basic testing over this period. The testing yielded favorable results.

A decision has been made to start up production of ECTT central offices. The first offices will be produced in the shops of the Gdansk division of the Institute. The offices will be mass-produced in future years at the Telkom-Telmor plant in Gdansk. This work has now reached an advanced stage. Testing of the prototype ECTT central office has begun, and preparations are now underway to integrate the first offices made by the Communications Institute into the national network.

Program-controlled electronic switching offices are equipped with computers. It has been assumed in the current design version of the ECTT that central control of the office will be based on an SM4 minicomputer. Two such minicomputers operating simultaneously have been installed to assure trouble-free operation of the offices. The ECTT office also has special microprocessors which are operated as text transmitters and receivers and which are used for recording and initial processing of incoming switching signals and emergency signals.

Development of electronic telegraph and remote data processing offices involves a software problem as well as a hardware problem. This development in Poland representing a pioneer effort as regards the ECTT offices. The

software for the CCITT offices is being written by a team of specialists of the Gdansk division of the Communications Institute headed by Roman Jelinski. This team is cooperating with the Data Processing Institute and the Telecommunications Institute of the Gdansk Institute of Technology, and with the Independent CCITT Languages Laboratory of the Communications Institute in Warsaw.

Electronic switching office software is also a topic of interest to the CCITT. Recommendations have been drawn up for the software. They are discussed in an article by Andrzej Hildebrand, "CCITT Program Control Languages," published in PRZEGLAD TELEKOMUNIKACYJNY, No 9, 1985. This article discusses recommendations for SDL (specification and description language), CHILL (CCITT high-level language), and MML (man-machine language). A part of this article is worth repeating. "The greater part of the 'intelligence' of telecommunications equipment control programs resides in the software. The software development cost and the extent of software compilation are many times higher than the corresponding figures for the hardware. Switching systems whose software runs to a million lines of source code and whose development has taken thousands of man-years are no rarity today. Switching software systems are the largest software systems created in telecommunications."

"Switching software has particular features distinguishing it from other applications. It is bulky and complicated, it must be extremely reliable, it must be exceptionally resistant to errors resulting from damage to hardware and from human error, and it must be easy to modify, in view of the long service life of switching systems."

The articles published in this issue of PRZEGLAD TELEKOMUNIKACYJNY are examples illustrating a new field, which might be termed "telecommunications software engineering." This field has come into being on the boundary between telecommunications and data processing. For obvious reasons it has evolved a language of its own incorporating data processing concepts and pertinent English-language terms. The articles may consequently be difficult for specialists concerned with development and operation of telecommunications hardware to understand. The most essential explanations have been included in a miniglossary of data processing terms, and the reader can find others in the pertinent data processing literature.

There is increasing cooperation between designers of telecommunications hardware and writers of appropriate software for this hardware in the area of modern switching technology (and in other areas as well). Outside the Communications Institute, a team of programmers is active at the Telekom-Teletra plant in Poznan (software for electronic telephone exchanges in the E-10 system). Work is also in progress at the Telekom-ZWUT plant in Warsaw to upgrade the telephone exchanges in the PENTACONTI system by introducing electronic control for these exchanges. A program controlled electronic telephone PBX has been developed at the Military Technical Academy. Theoretical and applied research on program controlled telephone exchanges is also being done at other institutions, such as the data processing and telecommunications institutes of the Gdansk Institute of Technology, the telecommunications institute of the Warsaw Institute of Technology, and at the Poznan Institute of Technology. Consequently, PRZEGLAD TELEKOMUNIKACYJNY expects to devote increasing space to this subject area.

## DOMESTIC SATELLITE DEBATE REMAINS UNRESOLVED

Buenos Aires SOMOS in Spanish 17 Dec 86 p 14

[Article by A. Alcaraz and H. Simeoni: "Satellite: the World at Home"]

[Text] Argentines almost do not dare dream of the possibility that, within a short time, their television sets may be opened to the syntony of foreign channels, virtually without any limit. But there is every indication that, by mid-1987, the decree will be published allowing private persons to install parabolic antennas in the gardens or terraces of their homes (with a diameter of about 3 meters) that will enable them to pick up the televised transmissions beamed by the eight artificial satellites penetrating the space over this continent. The only limitation is imposed by the ban on marketing the tapes procured through this system.

An impatient person may ask the question: "Why not grant the mass authorization now?" A high-ranking source in the Communications Secretariat disclosed to SOMOS: "It is our intention to give the national industry time to prepare for production. From what we know, the manufacturers are greatly interested."

### Steps and Debate

The government had taken the first step toward mobilizing the market (officials call it "creating the need") during September, when Decree 1613 authorized holders of licenses for television services to make use of the only television reception (in principle, ATC). Later there will be permission to install ground telephony stations. In this way, the satellite will be at the disposal of semirural telephony and the data market. In addition, the automatic coin box and credit card systems would be able to have automatic access to the satellite link.

In any event, the essence of the debate under way is focused on the possibility of whether or not Argentina can have its own domestic satellite (Brazil and Mexico already have one). For the present, the government has not yet made a decision in this regard.

Those favoring the plan are urging a quick decision. They point out that putting the satellite into orbit takes from 3 to 4 years of study and,



considering the fact that the useful life of one of these units is 10 years, any delay would jeopardize the immediate potential of the country's communications.

The opponents think that the microwave link system would suffice for Argentina. They cite the example of the United States, which has a large microwave network, although it has several satellites. Conspiring against this solution is the high cost of maintenance and installation (a retransmitting station is required every 50 kilometers).

How much does it cost to put a satellite in space? It is estimated at about \$300 million, although that figure could be higher because, since the fall of the Ariane, the so-called "launching insurance" has increased substantially.

To be sure, the satellite ensures a high-quality signal, and the firms engaged in this business provide financing with 3 years of grace and from 7 to 10 years for amortization.

The issue is still being reflected upon in the official dispatches. At the present time, Argentina is leasing from an Intelsat satellite one and a half transponders (each one has 800 telephone channels). The Communications Secretariat intends to lease or purchase (this has not yet been decided) four transponders of a new Intelsat satellite, to be launched in October 1987. The leasing would require \$1.40 million per year per transponder; while the purchase, on the other hand, might take about \$20 million. The officials have reached the conclusion that, for a country to need to have its own satellite, it must have leased or purchased at least 12 of the 24 transponders that comprise a satellite.

There is a concrete proposal from the French Bank Foundation to provide the country with the so much debated domestic communicator. It mentions an estimate from the French consulting firm, Sateil Conceil, setting the total cost at \$285 million. The Communications Secretariat is preparing a report that virtually precludes this possibility. The reason: with such costs, the rate that would have to be imposed on the user would rise more than twofold.

The official coolness toward the possibility has an additional explanation: For the need for "our own satellite" to be made clear, it would have to be estimated that the future growth of the Argentine economy must stand at a rate of 3 or 4 percent of the gross domestic product. No one believes that this will occur in the immediate future.

2909

CSO: 5500/2021

GOVERNMENT FIRM IN PLAN TO BUY OUT CABLE & WIRELESS

Belize City THE BEACON in English 3 Jan 87 pp 4, 7

[Text]

THE UDP Government, aware of the importance of telecommunications to Belize, continues to spare no effort in ensuring the steady growth of the industry in the national interest.

In 1978, an External Telecommunication Agreement was signed between the Government of Belize and Cable and Wireless for the operation of certain External Telecommunication Services in Belize.

Under that Agreement and in accordance with the Telecommunication Ordinance, BTA issued a licence to Cable and Wireless for a period of 10 years. This Agreement which expires 31st December, 1987 will not be renewed.

Cable and Wireless, had been informed of this decision and has been invited, along with another British Company, to make proposals to the Government to explore the possibility of their becoming minority shareholders in the new Belizean Telecom-

munication Company which will operate both the internal and external services.

Last week, Cable and Wireless informed the Government that their corporate foreign investment policy has always been to hold majority shares or management control in any minority shareholding joint venture investment.

Government in turn has categorically stated that Cable and Wireless' policy is unacceptable, in the national interest.

Under Government's development plan, possible areas for private investment within the Economic Infrastructure, includes telecommunication among the industries in which the private sector would be encouraged to participate in joint venture investments.

Simultaneously with this policy, BTA has undertaken a Network Modernization Programme, which includes the construction of a new building to

house offices and equipment to satisfy the demand for national and international services of their customers. This programme includes an increase in the present exchange capacity from some 8,000 lines to over 20,000 telephone lines.

In addition the programme also calls for the purchase of new computer controlled digital exchanges and the introduction of International Direct Dialling Facilities at an estimated cost of over twenty million dollars.

All this is in conformity with Government's

plan of providing a modern and up-to-date telecommunication system in Belize.

The Government of Belize remains firm in its policy that it is in the best interest of the Government and people that both the internal and external services be provided by a new Telecommunication Company.

In the new company, the Government will own some 75 per cent of the shares, thus improving the present position of BTA which now controls only about 50 per cent of telecommunication business in Belize.

/13046

CSO: 5540/060

BRAZIL

# BRASILSAT CHANNELS TO BE RENTED TO 5 COUNTRIES

PY091714 Rio de Janeiro O GLOBO in Portuguese 6 Feb 87 p 21

[Text] Peru, Bolivia, Argentina, Venezuela, and Colombia will soon begin nationwide television networks using Brasilsat II channels. This was revealed yesterday by EMBRATEL [Brazilian Telecommunications Enterprise] President Pedro Jorge Castelo Branco, who explained that the company will rent some of its currently unused transponders to those countries for their domestic networks. Each transponder is capable of handling 1,000 voice channels, or 500 simultaneous conversations, and will be rented for \$2 million.

EMBRATEL is concerned over the demand for orbital space and Castelo Branco said that it has already requested the Frequency Registration Board (the entity which coordinates the frequencies of space transmissions) to reserve orbital space for the third Brazilian communications satellite to be launched in the future.

Castelo Branco met with the press yesterday to report on EMBRATEL's 1986 activities. He said that the company's services grew 24 percent, surpassing the 21.4 percent growth in 1985.

Regarding telephone traffic, the domestic sector grew 33 percent, the international 27 percent, and data processing grew 40 percent. However, operational income fell 18 percent compared to 1985.

The small effect of the tariff readjustment made last November did not give EMBRATEL a comfortable surplus. After the payment of costs, there was only a 20-percent profit of every cruzado earned from domestic and international telephone traffic.

Castelo Branco indicated that it is time to reorganize EMBRATEL. The company was created 21 years ago with the purpose of giving the country the ability to communicate. He added that telephone communication and data processing has changed. With the coming of the new century, EMBRATEL must be ready for the changes in technology and for a new era.

/12858

CSO: 5500/2028

BRAZIL

TELECOMMUNICATIONS AGREEMENTS SIGNED WITH CUBA

PY060152 Brasilia Domestic Service in Portuguese 2100 GMT 5 Feb 87

[Text] In view of the establishment of Brazilian-Cuban diplomatic relations, bilateral exchange in the telecommunications sector will increase. The Cuban Government has shown interest in importing Brazilian telecommunications equipment because of its sophistication, good prices, and high quality.

This is what Embratel [Brazilian Telecommunications Company] Chairman Pedro Castello-Branco said today in Rio de Janeiro when commenting on the result of the visit that Communications Minister Antonio Carlos Magalhaes paid to Cuba and the treaties that were signed.

[Begin Castello-Branco recording] We discussed the establishment of direct communication circuits between our two countries, and their possible expansion. We also discussed the possibility of channeling via Brazil all Cuban communications to South American, European, and even Far Eastern countries, with which Cuba does not have direct communications link.

We also agreed that all Brazilian communications for countries in the Socialist bloc will be channeled through Cuba. [end recording]

These agreements were signed between Embratel and ENTEL-Cuba [National Telecommunications Enterprise of Cuba]. Brazilian-Cuban telecommunications were inaugurated in January in a telephone conversation between Cuban President Fidel Castro and Brazilian President Jose Sarney, who opened the Direct Dialing International System between the two countries.

/6091

CSO: 5500/2026

CABLE AND WIRELESS GETTING CABLE-TV LICENSE DESPITE PROTESTS

Castries CRUSADER in English 17 Jan 87 p 3

[Text] Next month St.Lucians who can afford to pay Cable and Wireless a fee of One Hundred and Fifty Dollars ( \$150.00) for installation and a monthly sum of \$40.00 will be fortunate to view Cablevision, and switch their television sets on and off to eight different channels.

This disclosure was made here this week at press conference by Mr. Keats Compton- Operation Manager and Mr. Ian Boatman, General Manager of Cable and Wireless.

Mr. Compton gave no exact date for the commencement of operation, but noted that the stage is set for St.Lucians to view Cable T.V. which will provide them with a choice of North American Channels .

According to Mr. Compton the channels include; CNM (news), ESPN (sports) HIT VIDEO USA) (music video) EWTN (religious), FNN (Financial News) Tempo T.V.(General Entertainment) The learning Channel) Educational and Documentary) and The Black Entertainment Network) General Entertainment).

Mr. Compton also informed pressmen that for an additional \$10.00 monthly, persons using the system can also receive 8 stations

of F.M. stereo music, for which an FM receiver is required. The range of music covers Country and Western to Jazz.

General Manager Mr. Boatman told pressmen that some three thousand subscribers are expected to be connected during the first year of operation, and connections will be made on an area by area basis.

Dispelling the popular view that twenty-four hours television viewing of North American Channels can lead to Cultural penetration of the region Mr. Boatman said that his company by offering some eleven Channels is half-way solving the problem, since the choice of viewing is left with the subscribers.

When Cable and Wireless announced its intention last year to introduce Cable T.V. to the Island concerns were raised in various quarters. Protesters of the idea also expressed their displeasure by marking strategic areas in the city, calling for a ban on Cable T.V.

It would appear that the voice of the protesters have been ignored and Government have granted Cable and Wireless a licence for its operation of Cable T.V.

## BRIEFS

INDIAN TELEVISION RECEPTION--There is a rush of people at the city electronic shops. Elevated antennas are in high demand. Indian television programmes can now be seen on television sets in Dhaka. So long areas close to Indian border could see Indian television programmes. Most of the people who brought antennas told this correspondent that they were not interested in Indian TV programmes. But they are happy because they will be able to watch international sporting events particularly cricket. The interest has intensified with India-Pakistan cricket series beginning early next month. Many people watched the charity cricket match between Pakistan and BCIXI at Bombay on Tuesday.  
[Text] [Dhaka THE BANGLADESH OBSERVER in English 21 Jan 87 p 1] /9274

RAILWAY TELECOM SYSTEM--Chittagong, 1 Jan--Bangladesh Railway will connect all of its 300 stations all over the country through an integrated telecommunication system at a cost of Taka 55.86 crores. Railway sources here told BSS yesterday that work was going on and is expected to be completed by September, 1989. The sources said that a four member engineering team from Telecommunication Cables Ltd. England is already in the country for executing the project. The Norwegian Development Agency assisted project is designed to install underground telecommunication system replacing the existing overhead cables system. Under the scheme both control telephones and block telephones will be installed in all 300 stations of Bangladesh Railway, besides 18 teleprinter machines. The total length of 1700 kilometer will be covered by track, bridges, crossing, fencing and cable laying under the project, the sources said. Four towers, 49 service buildings and 147 residential accommodations will also be constructed. [Text] [Dhaka THE BANGLADESH OBSERVER in English 6 Jan 87 p 7] /9274

DHAKA-DELHI DIALING--Bangladesh and India will have direct dialling facilities from March, this year, reports BSS. This was disclosed in Dhaka on Thursday by Foreign Minister Humayun Rasheed Choudhury and his Indian counterpart Mr Narayan Datt Tiwari while talking to newsmen at the airport before the Indian Minister left Dhaka ending a three-day visit. They said that the facilities would begin from Bangladesh's National Day--March 26 when President H. M. Ershad would talk over telephone with Indian Prime Minister Rajiv Gandhi. The two sides had been working for a long time to have these facilities and now two neighbouring countries would have them, the Ministers said. [Text] [Dhaka THE BANGLADESH OBSERVER in English 10 Jan 87 p 3] /9274

NCNA DHAKA PLANS.--The Xinhua News Agency delegation called on the Information Minister Mr Anwar Zahid at his office in Dhaka Wednesday morning, reports BSS. The Leader of the 3-member delegation and Deputy Director General of Xinhua, Mr Zeng Jianhui thanked the minister for his effort to further improve the co-operation in the field of exchange of information between the two countries. He informed the Minister that Xinhua News Agency would establish a permanent bureau in Dhaka which will be their centre for news gathering and distribution in this region. The information Minister assured the delegation of all help for the expansion of Xinhua office in Dhaka. Mr A. B. M. Musa, Managing Director, Bangladesh Sangbad Sangstha (B.S.S.) was present on the occasion. The delegation was entertained to a lunch by the Reuter Bureau Chief in Dhaka, Mr Atiquil Alam. The delegation left Dhaka in the afternoon for Beijing on the conclusion of their six-day visit to Bangladesh. [Text] [Dhaka THE NEW NATION in English 26 Dec 86 p 3] /9274

TELECOM PROJECTS APPROVED--The Executive Committee of National Economic Council (ECNEC) at a meeting held in Dhaka yesterday approved two projects costing Taka 61.49 crore, reports BSS. Under the second project direct dialling will be introduced for speedy telecommunications with important places of the country. In the first phase of trunk dialling project, 64 districts will be brought under direct dialling by establishing automatic exchanges at 95 important places. [Excerpts] [Dhaka THE NEW NATION in English 25 Dec 86 p 1] /9274

CSO: 5550/0086



## RADIO SATELLITE SERVICE IN REGION UNDER STUDY

New Delhi PATRIOT in English 23 Dec 86 p 5

[Text]

Agartala, Dec 22—The two dead bodies found last week and believed of two local criminals of Gandacherra, who were brutally done to death by the TNV extremists.

Disclosing this to this correspondent a responsible police officer of Gandacherra, said that on 20 November, the dead criminals Kupidhan Reang and Dhirendra Reang were taken forcibly by the TNV hit gang led by Commander Kartick Koloj to a dense forest range near Gandacherra. First the two were tortured and finally gunned down. The duo were the brothers of surrendered extremist Churanta Reang who is currently employed in Mr Gandacherra primary health centre.

Highly placed sources said that both the victims was very close to CPI-M district council member Pakhi Ripura. Interestingly the CPI-M circles first disclosed the information to the police claiming the two bodies of the TNV extremists. On 3 December the police recovered the two decomposed bodies.

The victims were in possession of two rifles which the rebels took away after killing them.

/13104

CSO: 5550/0079

PLANS TO IMPROVE NORTHEAST TELECOMMUNICATIONS TOLD

Bombay THE TIMES OF INDIA in English 27 Dec 86 p 14

[Text] Telecommunication facilities in the remote and backward areas of the eastern region have been accorded priority in the next 3 years, the minister of state for communications, Mr Santosh Mohen Deb, said here today.

A task force under the charge of a general manager has been created to expedite projects in the region and high priority would be accorded in the matter of supply of equipment and induction of modern technology, he said.

Senior officials have been asked to make frequent visits to the far flung areas to boost the morale of the staff, he added.

The current plant for north eastern states envisages an addition of 17,600 lines of switching capacity and about 3,300 "running kilometres" of microwave of uniform high frequency system.

Two new digital trunk automatic exchanges at Guwahati and Horhat, eight new telex exchanges and 20 satellite earth stations in some towns are being set up, he said.

Mr. Deb said during the current year, 5,300 lines of switching capacity will be added to the network which includes commissioning of electronic exchanges at Halflong (Assam), Lungleith (Mizoram) and Itanagar (Arunachal Pradesh).

In Andaman Islands, an electronic exchange will replace the stronger exchange of 2,000 lines at Port Blair. Ten new exchanges and an electronic telex exchange would be commissioned and about seven satellite earth stations would be set up, he said.

He said 2,000 or more people will get access to each other and the main land. Port Blair will have a subscriber dialing system when it is connected with Calcutta during the year, he added.

Mr. Deb said this year the department has a target of increasing the exchange capacity of 2.8 lakh lines and provide additional telephone connections to 2.2

lakh people. In the first half of this year, against a target of 55,00 lines for switching capacity the department was able to commission 62,400 lines of equipment.

For the first two quarters of this year no fewer than 93,100 lines were added against the targets of 45,000 lines which, he said, was almost double than the targetted figure.

Another 11 major exchanges with a total of 48,000 lines were commissioned in October. Three of these were the digital electronic type, he said.

In-house computers have been commissioned in Calcutta and Madras to monitor on-line subscriber fault control and to issue telephone billings. Directory Inquiry service (197) in Lucknow and Hyderabad have been computerised, he added.

/13104

CSO: 5550/0080

## PAPERS REPORT ON STATE OF TELECOMMUNICATIONS

## Minister's Announcement

Bombay THE TIMES OF INDIA in English 30 Dec 86 p 9

[Text]

**T**HE minister for communication, Mr. Arjun Singh, has announced here today the formation of quality circles with representatives of the staff and management to regularly review the quality of service provided to customers.

He feels that all staff should be involved in the telecommunications improvement drive. He met the general secretaries of the three staff federations and invited their co-operation in this task.

The telecommunication facilities in the country are in such a terrible state that a few days ago Mr. Santosh Mohan Dev, the minister of state for communication, had announced he would be making 20 trunk calls every night to see how the system worked.

The quality circles are expected to meet at least once a month. They will cover problems in all branches — telegraph traffic, telephone exchanges, trunk exchanges, telex exchange transmission stations and administrative offices.

The small team will assess fault rates, call success rates, delay in trunk calls, trunk effective percentage on different routes, time taken to answer auto manual services and delays in bills.

Seven broad areas of work have been spelt out including review of the financial working of units and how to improve revenue earning traffic and reduce other costs.

The team will also work strategies for increasing productivity, reducing absenteeism and optimising manpower utilisation. It will suggest areas where individual competence can be improved by giving special training.

The quality circles will, however, not be a forum for settling individual staff grievances nor will they replace the periodical union/JCM meetings prescribed for settling staff management problem.

Each quality unit will have 10 members including the head of the unit and seven from the workers. A unit council, once formed will function for two years.

## Issues Examined

New Delhi PATRIOT in English 28-30 Dec 86

[28 Dec 86 p 5]

[Text]

Inability to define and carry out consistent policies, frequent reversals causing repetitive imports, lack of funds and organisational inertia have added up to defeat the efforts for self-

reliance in telecommunication sector.

This is the conclusion of a study "the quest for Technological Self-Reliance. The Case of Telecommunications in India",

that is being kept secret but being examined at the highest levels in the Ministry of Science and Technology and other government circles.

The study covers the telecom-

munication sector from 1948 to 1985 and makes a thorough analysis of all aspects from policy planning to financial resources, manufacture of equipment, import deals and India's own Research and Development efforts.

It has been done by two foreigners Claes Brundenius and Bo Goransson as part of the research project "Costs and Benefits of Building Up An Indigenous Technological Capability — A Comparative Case Study of Telecommunications in India and Brazil".

Financially supported by the Swedish Agency for Research Cooperation with Developing Countries (SAREC) and initiated by the Research Policy Institute, it is based on statistical and other data provided by the Indian telecom experts from the now Telecommunication department, the Telecommunications Research Centre, the Department of Electronics, CDOT and the ITI among others.

The study holds that after 36 years with a policy aiming at self-reliance and in spite of a fairly strong technological base in electronics, India is still relying on imported know-how to a great extent in the provision of telecom services.

Summarising the telecom strategy so far, the study says that despite a characteristic re-

petitive import of technology at high costs in terms of foreign exchange, the country has been unable to bridge the demand gap and unsatisfied customers.

Though significant progress has been made since 1948, notably in the generation of manpower resources, it has been neither qualitatively nor quantitatively sufficient to keep up with the changing requirements of the sector, according to the study.

The study is highly critical of the CIT-Alcatel deals and states that India would be paying three times more than Brazil to obtain know-how for production of electronic switching.

Brazil was sold the AXE system and the deal signed between Ericsson of Sweden and its former subsidiary Ericsson Do Brasil contains most of the components of the ITI deal with Alcatel and according to the study, the French E10B system is considered, even by the French, to be less technologically advanced than the corresponding AXE system sold to Brazil.

The deal with the French firm has achieved exactly what the Communications Ministry fought so hard to stop a situation where the future development of the Indian network will be tied to one transnational corporation.

By accepting the French firm's bagging all the contracts at

stake in the electronic switching, the sector will at least in the near future be closely tied to a single system, the study says.

The study points out that lack of commitment and lack of adequate training at all levels are to some extent responsible for the low efficiency in the sector. Furthermore, the overall efficiency of the sector can be seriously hampered if no consistent set of policies exist, it adds.

The study particularly stresses the need to resolve the conflict and rivalry between the Department of Electronics and the Telecommunication Department over the implementation of the policies.

It says that the conflict and rivalry has been especially evident in the case of import of technology, and sometime conflicting objectives of the two departments.

The study states that India has demonstrated obvious difficulties in providing own designs substituting for imported technologies. The longer the learning period, the higher the risk for allowing the sector to stagnate or even degenerate.

If the sector ever should take a step from obsolete technology, inefficient production and bad services it must be done in the near future, least the learning experience be lost and devaluated.

[29 Dec 86 p 5]

[Text]

The first Industrial Policy Resolution dating back to 1948 had put Telecommunications in the category of industries where the state had the right to intervene and acquire even existing units. While recognising the need for foreign capital and technology, it insisted on the gradual Indianization of foreign business and training of manpower to take over from the foreign experts.

A second Industrial Policy Resolution was adopted in 1956 and there were no changes with regard to the attitude to foreign capital. But it stated categorically that the future development of the telecom industry was to be the exclusive responsibility of the state.

With this as the basic policy line, the study by Claes Brundenius and Bo Goransson stresses that it indicated the importance planners attached to the telecom sector in achieving the overall objective of self-reliance.

Yet the allocations to the sector did not seem sufficient to keep up with the demand and in fact it was accorded a low priority as the per capita allocation lagged behind that of many developing countries.

"It appears that the Planning Commission has not regarded the infrastructural importance of a well-functioning telecommunication system,

reason enough for giving priority to the sector, but instead regarded the output of the sector as a luxury item for the elite of the people", the study says.

The study was hopeful that as per the ambitious plans drawn up by ITI Telecom Department and others, the sector would get priority in the seventh Plan and onwards.

One of the key objectives of the strategy was to build up domestic production and technological capability and replace repetitive imports by licensing agreements and indigenously developed designs. But all through the changes made have virtually crossed out this objective.

In 1947 India had only 321 exchanges with about 82,000 working connections. The density per 100 inhabitants was 0.05. This had gone up to 0.4 per 100 inhabitants by 1981 and may be a bit higher by now.

As the existing telephone network then was of British design it was decided to acquire know-how from a British firm to base the future expansion. Accordingly Associated Telephone and Electric Co (ATE) supplied the Strowger type technology.

In 1948 the Indian Telephone Industries (ITI) was established in Bangalore under the Ministry of Communication and in 1950 it was converted into a public sector public limited company. It was granted monopoly to produce telephone systems.

The first factory in Bangalore began production of the electro-mechanical switching (Strowger) system. In the mid-60s the Crossbar technology was introduced and Bell Telephone Manufacturing, a subsidiary of ITI, won the contract. The collaboration between the Belgian Bell and ITI was to last seven

years and include establishment of a factory in Bangalore.

The 60s saw the country producing two types of systems. The cross-bar system encountered problems. So a task force was set up to indigenize the Belgian system. The modified system took 17 years to complete and only in 1981 was it ready for production. Even then the collaboration was with the Belgian ITT to acquire some equipment that was lacking.

But already in 1974 the Telecommunication Research Centre developed and put into trial an electronic exchange in Delhi. In 1979 it was decided that future expansion of production of exchanges for the telephone system should be met by electronic exchanges, the study says.

It can be seen that the Indian cross-bar system took such long time to develop that it was already obsolete by the time it was put into production. At the same time even in respect of the electronic exchange, in spite of the success of the TRC exchange, it was decided to im-

port know-how on the ground of lack of experience in production technology.

To meet this immediate demand for electronic exchanges the country in 1982 went in for the controversial CIT-Alcatel deals.

To add to this inconsistency in policy, lack of planning and extra long gestation period for Indian development, the department of electronics, established in 1971, intruded into the responsibility areas of the then P&T department and the now telecommunications department.

The study points out that though the objectives of the two departments are not incompatible in the long run, frequent clashes have occurred between the two, particularly in the area of import of technology especially in the decisions of the P&T and now telecommunication department for its short run objectives to meet the excess demands.

Thus the study holds that production shortfalls and resources crunch apart, the inconsistency in the policy itself has affected the growth of this vital sector to match the burgeoning demand.

[30 Dec 86 p 5]

[Text] In 1955, there were 22,000 people on the waiting list for telephones constituting 14 per cent of the total 149,000 lines in existence. By September 1975, the list had risen to 637,000 — almost half of the installed 1.3 million connections.

This proved that the demand was increasing much faster than the growth of the network and the growth of the network and the growth rate of the stock of telecommunication service components that has averaged at 10 per cent per annum.

In a bid to curb and control the rapidly increasing demand, the Government introduced the advanced deposit system and as a result the demand fell dramatically only to continue rising again to reach a waiting list of 737,000 by 1984. Thus, despite the deposit system, the excess demand is higher than before, says the study by Claes Brundenius and Bo Goransson.

The study quotes the sixth five-year telecommunication plan that shows the actual growth has been less than anticipated and the targets achieved have also fallen short of the projections.

Thus, for instance, in 1984 while the anticipated demand (working connections plus waiting list) was slated at 3,673 million lines, the actual demand was only 3,405 million lines.

While the working connections were expected to go up to 2,984 million lines, they actually reached only 2,668 million lines, that is 8.19 per cent over the previous year as against the expected growth of 12.86 per cent. On the other hand, the waiting list grew more than anticipated at 737,000 as against the projected growth of 689,000 lines.

The ambitious plan had anticipated that when production catches up, the excess demand would disappear by 1990 when 7,164 million lines would be working. While the plan called for an increase of 10 per cent/year in installed connections during 1980-84, it actually achieved only 7.3 per cent.

The study points out that besides these lacunae, the shortage of telephones has led to a very high rate of telephone calls/telephones with chronic congestion and overload as a result. As per estimates only a third of the numbers dialled get through at the first attempt.

Coming to the production aspect,

the authors say that actual production has often not been able to come close to the targets in the plans. Thus, for instance, the crossbar components production in the period 1965-68 lagged behind at an average of 80 per cent over the planned levels.

Again the ITI's sixth five-year Plan (1980-85) showed that in switching equipment the production of stronger exchange components was between 13 to 14 per cent short, while in the case of crossbar it was 7.53 per cent short (provisional figures) and in the case of electronic exchange it was 23.33 per cent short. Further, the number of telephones was 9.41 per cent short of the target sum of annual targets 3,131,800 telephones.

The study's preliminary assessments are that finances for R & D are far short than would be required and that the Telecommunications Research Centre needs more orientation. The only organisation on which the study makes a positive comment is the C-DOT of Mr Satyen (Sam) Petroda.

As for the future, the study says the ITI has drawn up an ambitious plan to instal 24 million lines by 1998. This is so on the estimate that 28 million new telephones are required to bring down congestions to manageable levels.

Such a high level of installation would increase the telephone density to 12 per 100 inhabitants in urban areas and two in rural areas as against the present density of four per 100 inhabitants. The challenge is formidable, says the study.

The ITI plan requires a total capital requirement of Rs 20 billion for the period 1985-87. But to achieve this 1998 target would need seven factories producing electronic switching. To

achieve the same goal of 24 million lines with one factory it would take up to year 2016 and with two factories by year 2006.

This plan needed the Government to allocate a sum of Rs 125,000 million in the 7th Plan period.

The ITI, keeping in view that the Government may not sanction this amount, formulated an alternative plan that required a minimum capital of Rs 8 billion.

Almost a third of the ITI's proposed Rs 11 billion plus amount was expected to go in foreign exchange requirement. But this plan did not take into account the possibility of setting up a factory using the design and production technology for electronic switching that would be developed by C-Dot.

The study summarises that if the 7th telecom plan proposed budget is approved, then for the first time there will be enough resources for actually improving the performance instead of fighting a losing battle against mounting surplus demand and congestion.

The study accepts that though the financial terms and conditions of the French agreements are not advantageous to India, they involve a substantial transfer of know-how and improved possibility for modernising the telecom sector.

The study, however, concludes on the warning note that substantial allocations alone will not solve the problem. A judicious use of resources in some key areas of telecom technology after identifying of priorities instead of duplicating areas of R & D work, trained manpower and meeting targets may alone help the country achieve the objective of an adequate telecom system.

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CSO: 5550/0081

## SECOND GENERATION SPACE VEHICLE SET FOR MARCH LAUNCH

Bombay THE TIMES OF INDIA in English 6 Jan 87 p 9

[Article by L. K. Sharma]

[Text]

INDIA's second generation space vehicle, ASLV, will be launched in the last week of March with a scientific payload for recording gamma ray bursts.

The vehicle's third and fourth stages had already undergone successful static tests and it was envisaged as the workhorse for the space programme.

The minister of state for scientific departments, Mr. K. R. Narayanan, told newsmen at the science congress today that the more ambitious polar satellite launch vehicle was scheduled to be launched by the end of 1989.

Mr. Narayanan said some of the problems in the development of ASLV had been solved and it would be possible to adhere to the revised schedule. The ASLV launch had to be put off because of the failure of the fourth-stage Kevlar motor. This had now been tested.

The second ASLV scheduled for 1988 would carry an Indo-German stereoscopic remote-sensing experiment. The scientific payload was being developed jointly.

The ASLV follows the SLV-3, India's first rocket, and will have two strap-on boosters to give it enhanced capability. It will carry a payload of 150 kg.

India's first remote-sensing satellite with a resolution of 30 metres was expected to be launched in October. The country will then have an additional source of getting satellite imagery.

Mr. Narayanan did not visualise any

threat to the domestic satellite-based services despite the delay in the launching of INSAT I-C because of the set-back to the American and French launch vehicles.

The pre-shipment review of INSAT I-C would be held next month and it would be launched by the French Ariane rocket in February next year. The INSAT I-B was expected to run its full term till December, 1989.

A new major facility for atmospheric research with applications in the meteorology would be established near Tirupati, he announced. The mesospheric-stratospheric-tropospheric (MST) real-time radar would be a collaborative venture designed indigenously.

The radar, one of the few of its kind in the world, would be partly commissioned in two years and fully in four years. It was expected to cost Rs. 7 crores. The Council of Scientific and Industrial Research (CSIR) was one of the agencies involved in the project besides the Tata Institute of Fundamental Research.

A CSIR laboratory had also completed a study on the toxicity of pesticides and this would form the base for the government's pesticides policy. The industrial toxicology centre in Lucknow had collected data on toxicity and environmental impact of pesticides used in India.

A polymer for the retention of water, developed by another CSIR laboratory, would be applied in the wasteland development programme. Seeds coated with this polymer, "Jalshakti", would be sprayed from the air. The coated seeds will be brought-resistant

since the polymer absorbs water and releases it gradually.

For the wasteland development programme, space technology was also being used since satellite imagery as helpful in the assessment of the problem and the collection of data. Some classification studies had already been done.

Satellite imagery had also given an indication about the depletion of forest resources. Further studies would be conducted by the forest department itself using the remote-sensing and other techniques.

Later, addressing the science congress, Mr. Narayanan called for increased investments in research and development and science education. "While we put enormous emphasis on technology, it must be understood that science is the basis and the matrix from which technology is generated," he said.

There was a misconception that Japan reached its present technological status merely by imitating America. The fact was that Japan had over a long period invested enormous sums of money on scientific education.

Mr. Narayanan also emphasised the need for the popularisation of science and the cultivation of scientific temper. It was amazing how India was witnessing the recrudescence of obscurantism in new forms and how education had sometimes preserved in subtle ways some of the social distinctions and evils of the past.

A more thorough scientific revolution in people's thinking was required if India was to remove its hurdles to development, the minister said.

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CSO: 5550/0083



## BRIEFS

FIBER OPTICS PRODUCTION--Mr. K. P. P. Nambiar, Chairman, Indian Telephone Industries, told pressmen here yesterday that fibre optics, the new device in communications network, would be produced at the Bangalore ITI. The ITI expansion at a cost of Rs. 62 crores would be completed by the end of 1987 and 100 acres more would be acquired for the purpose. Micro-earth stations, the low-cost system in communication, would be produced by the ITI by the middle of next year. A public limited company--with 40 per cent U.S., 49 per cent ITI and 11 per cent financial agencies' participation--would be formed for this venture. These stations would render easy communication facilities for the press, banks and the railways. The cost of the stations would be 1 to 1 1/2 lakh rupees. The capital investment for the factory was Rs. 7 crores and the annual return was expected to be Rs. 25 crores. Digital telephone sets would also be produced. During the Seventh Plan, electronic exchange production units, with five lakh lines capacity, would be started at Mangalpuri in Uttar Pradesh and Bangalore. Our Tellicherry Correspondent writes: The installation of the first phase of the much-awaited automatic telephone exchange at Tellicherry was inaugurated by Mr. Nambiar on Monday at the newly-constructed five-storey building. [Text] [Madras THE HINDU in English 24 Dec 86 p 13] /13104

SOLAR-POWERED TRANSMITTER--The country's 186th TV transmitter, to be powered by solar energy, was inaugurated here today by the information and broadcasting minister, Mr Ajit Kumar Panja. The first 10-watt TV transmitter in the country will serve the township of Rawat Bhata and surrounding areas including Rajasthan's atomic power project and the Ranapratap Sagar hydroelectrical project. The transmitter will relay programmes from Delhi. Rs 1400 cr for media: A sum of Rs 1,400 crores will be spent on the improvement and development of radio and television programmes during the Seventh Five-Year Plan, Mr Panja said. A total of 105 new AIR stations were proposed to be set up in the country during the Plan period, nine of them in Rajasthan, Mr Panja said while inaugurating a new AIR station at Kota. The setting up of frequency modulation (FM) stations is also under consideration, he added. [Text] [Calcutta THE TELEGRAPH in English 5 Jan 87 p 4] /13104

CSO: 5550/0082

## VOA TRANSMITTER TO SERVE 2 OTHER RADIO STATIONS

TA020602 Jerusalem Domestic Service in English 0500 GMT 2 Feb 87

[Excerpt] The proposed Voice of America relay station to be built in the 'Arava region will not only serve the VOA but also Radio Free Europe and Radio Liberty. This was learned by the Voice of Israel after an interview with Walter Roberts, a member of the American delegation currently in Israel which has thus finished a series of discussions on this issue with Israeli officials. Yesterday senior Israeli politicians and officials, including the prime minister, discussed the topic, and the final agreement between Israel and the United States over the transmitter is expected in the near future. With more details, reporter Jeff Black.

[Begin recording] [Black] Roberts is the executive director of the Board for International Broadcasting, and as such heads Radio Free Europe and Radio Liberty. These stations broadcast to Eastern Europe, but in Robert's words the 'Arava transmitter will strengthen their broadcast signal and thus better infiltrate the soft underbelly of the Soviet Union to reach the various Turkish and Muslim ethnic groups there. In the early 1980's the VOA became interested in having a transmitter here, and the different U.S. radio stations decided to join together in a common cause.

Yoram Elster, director general of the Communications Ministry, denies that Radio Free Europe and Radio Liberty have got in through the back door. He said from the beginning of the negotiations, Israel knew they were talking to them as well as the VOA. I asked him whether Israel's relations with the Soviet Union had been taken into account when agreeing to the transmitter.

[Elster] All this has been taken into account, and we have some clauses within our agreement to cover our ability not to allow certain broadcastings if we think they may harm our relations.

[Black] Elster says that now all the discussions over principles are over, and he expects a final agreement to be signed in the next few weeks. [end recording]

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CSO: 5500/4506

TELECOMMUNICATIONS PROJECT WITH EGYPT PROCEEDS

JN050859 Amman JORDAN TIMES in English 5 Feb 87 p 3

[By Iliya Nasrallah]

[Text] Amman — Jordan and Egypt are taking practical steps towards implementing a major telecommunications project linking the two countries via Aqaba and Sinai.

Mr. 'Akif Harb, assistant director for operations at the Telecommunications Corporation (TCC), told *The Jordan Times* that work on the Jordanian side of the project, which has been going on for nearly two years, will be completed by the end of 1987.

The project inside Jordanian territory is expected to cost \$12 million and is to be covered by the treasury and the Kuwait-based Arab Fund for Economic and Social Development, Mr. Harb continued.

He said that the project, known as the Regional Microwave Transmission Project, was the subject of discussion between a team from the Egyptian Telecommunications Corporation and the TCC at a meeting held at the TCC Headquarters on Wednesday. The talks covered technical and engineering aspects and designs pertaining to the project.

The Egyptian team will remain here for one more week to hold more discussions on the project, Mr. Harb added.

According to TCC Director General Muhammad Shahid Isma'il, the talks will pave the way for a general agreement on the implementation of the project now that the Egyptian side has decided to announce a tender for carrying out their part of the scheme within their territory in the near future. He said that the Egyptian side will carry out its part of the project after agreement is reached with the TCC on all technical aspects and other related matters.

Following the talks, Mr. Isma'il stated that the TCC's part of the project entails linking the national telephone and television networks with those of Saudi Arabia and Egypt.

Once the project is completed, it will enable Egypt to have telephone links through the Jordanian network to Iraq, Syria, and Turkey and will boost Egyptian television broadcasts throughout the region, Mr. Isma'il added.

The project will also enable Jordan to make use of the international submarine cable network that links South East Asia, the Mediterranean and Western Europe, extending between Singapore in the East and the French city of Marseilles in the West, Mr. Isma'il added. This network, in turn, he said could later be linked with the American Continent through a submarine cable.

According to Mr. Harb, the TCC is building 11 relay stations between Amman and Aqaba in order to boost the microwave signals going to or coming from the south or to Egypt and Saudi Arabia. Once these stations are built and the project is operational, he said that towns such as Al-Shawbak and Al-Quwayrah in the south will have better reception for television programmes.

/8309

CSO: 5500/4603

PAKISTAN

BRIEFS

TELEX SERVICE WITH AMRITSAR--Automatic telex service between Lahore and Amritsar has started. Arrangements are also being made to introduce direct telephone dialing services between the two cities in March. [Text] [Karachi Domestic Service in Urdu 0200 GMT 13 Jan 87 BK] /12913

CSO: 5500/4708

ARABSAT ENCOUNTERS FINANCIAL DIFFICULTIES

London AL-TADAMUN in Arabic 29 Nov-5 Dec 86 p 36

[Text] How is Arabsat faring? Has this experiment succeeded and achieved the cherished goals? What obstacles are there that stand in the way of its development and higher income? These are the questions that AL-TADAMUN-Business put to the Tunisian minister of transport and communications, Brahim Khouja, who followed the project since its inception and attended all meetings critical to the creation and development of Arabsat, including the phase of setting up the Arab satellite station Asnad in Ladakhila, north of the Tunisian capital. Here are his remarks on the experiment and the possibility of further development.

[Question] What is the importance of the Arab satellite station "Arabsat" in Tunisia?

[Answer] This station is very important, for it controls the first and second Arab satellites and returns to its orbit any satellite that goes off track, thus ensuring that the two satellites stay in orbit. Furthermore, this station can serve as a main station. When we inaugurated Ladakhila station in Tunisia a few months back in the presence of the secretary general of the Arab League, Chedli Klibi and the Saudi minister of communications, Darwish Alawi al-Kayyal, the main station in Saudi Arabia was not operating because its technicians were in training, so the Tunisian station served as the main station. Ladakhila station can control four satellites, though at present it controls the two available Arab satellites. For this reason some considered the possibility of renting its services to foreign satellites, thus making a profit, especially in view of the proliferation of satellites. I believe that thinking along these lines should be part of a long-term plan which we ought to formulate collectively in order to make the organization a profitable venture, thereby overcoming its financial difficulties.

[Question] What are these financial difficulties?

[Answer] These difficulties are of two kinds: The first is financial and has become so serious it is causing us a lot of concern. At the most recent meeting of the organization we submitted proposals to solve this problem. The second, which is no less important, is administrative in nature. To date the organization does not have any administration in the full sense of the

term, no specialized divisions, and no oversight division's that is one reason we faulted the former manager, for he left the organization just as he entered it: no managerial structure, no SOP, nothing. This is incredible and totally unacceptable in an organization with a total investment of \$280 million. We hope that the new management will take this into consideration and set up a sound managerial system, because individuals are transients but establishments are things that last.

[Question] Can you tell us about the proposal submitted by Tunisia to solve the financial problem?

[Answer] Our proposals were based on a comparison with a similar organization which succeeded commercially, namely "Intersat." If we want to rent a line from this international organization, it will cost us about \$6,000 a year. Proceeding from this, some Arab brothers argue that Arabsat should charge the same amount for renting a line. This logic is in error for several reasons: First, Arabsat is an association which we, as Arab states, have established. It is not a commercial organization selling services, for it has been created with our capital, each according to his means; therefore its *raison d'être* is different from that of Intersat. Second, we should not overlook the fact that the rent Intersat charged its clients was exorbitant initially but was reduced gradually. At the beginning a single line rented for \$32,000, then was dropped to \$24,000, then to \$18,000 and finally to \$6,000. This is normal because huge investments initially overload an organization, prompting it to raise charges to offset its initial costs until it pays off the cost 6% investment. With the completion of all systems, the launching of a new satellite no longer requires a substantial amount of money, especially in view of the fact that a satellite has a life span of 7 years. This explains why Intersat's rent has been lowered. But Arabsat, at this stage, cannot charge \$6,000, because it would not be able to survive. This is because initially we estimated that as many as 2,000 orders would be received but actually we did not receive more than 1,000 orders. So we proposed that initially a line should rent for \$10,000 so that the organization can pay off its debt of \$140 million over a period of 5 years, at the end of which we should be able to launch another satellite to ensure the organization's survival. Moreover, we proposed a formula based on reducing rent as the number of orders increased. For example, if demand for lines next year rose, as expected, to 1,500 lines and in the year after to 2,000 and further to 2,500 and 4,000 lines, it would be possible to reduce the rent gradually to \$9,000 then to \$8,000 and \$7,000 until we hit \$6,000 which is what Intersat charges for the rent of one line.

This is the plan we submitted, and which was well received by our Arab brethren. We hope that at its next meeting the General Assembly of Arabsat will discuss this subject in a logical and sound manner to help the organization pull out of its financial difficulties. But there is another problem, for when we created this organization we did not provide any regulation that would permit it to borrow from lenders. All our investments were derived from our assets, and this is totally unreasonable. For no organization can survive if its main source of investment is its own capital. Traditionally, organizations use their capital as an asset to gain the banks' confidence. They can then borrow to

invest the equivalent or double their assets, if not more. And this is what we have not done in Arabsat. Therefore we have not been able to pay back more than \$180 million and we are still required to pay about \$104 million, taking into account all available equipment and systems. I believe that if we had a clear-cut plan from the beginning, things would have been more manageable, especially if all Arab countries had been committed to quotas in the organization and if all who had committed themselves to renting lines from the organization did so. What happened is that some did not opt to use their quota; others were committed to a certain number of lines but used less than the number committed. What is worse is that some rented lines have not been paid for. Payment is critical to the survival and success of the organization; otherwise, it would collapse. This is the plan we believe is capable of making Arabsat a success.

13257/12951

CSO: 5500/4602

PAFNA COUNCIL MEETING STRIVES FOR IMPROVED NEWS GATHERING

Dakar LE SOLEIL in French 22 Dec 86 p 2

[Text] (PAFNA)--The fifth special session of the Intergovernmental Council (CIG) of PAFNA concluded its work in Dakar on Friday evening with the adoption of seven resolutions relating to all activities of the Pan African Information Agency.

In particular, CIG approved the report of the general director, whom it also congratulated for the measures taken aimed at improving the operation of the information department and the administrative and technical departments of the agency. Touching upon difficulties linked with the operation of pools (Tripoli, Lagos, Kinshasa, Khartoum, Lusaka) and the regional offices (Harare, Addis Ababa) and noting that only the Lusaka pool is now operational, CIG recommended a series of measures aimed at reviving them.

Among other things, it is a matter of facilitating information gathering and of speeding up transmissions in regional pools, as well as rigorously recruiting qualified newsmen to head up such pools and offices.

A report evaluating the qualifications, duties and competency of personnel already on the job in the pools and regional offices must be submitted at the next CIG session scheduled for March in Addis Ababa.

Concerning the opening of offices outside the continent, CIG recommended that temporary arrangements be made with the national agencies that already have offices and correspondents abroad to cover certain events for PAFNA.

The resolution on financial and administrative questions, undoubtedly the most important one for the future of PAFNA, notes that out of budgetary allocations of 1,263,000,000 CFA francs for the 1986 fiscal year, only receipts totaling \$1,446,443.80 were recorded, a rate of cover of some 40 percent.

Observing that without contributions from member nations, the agency will not be able to carry on its activities, the fifth special session of CIG issued an urgent appeal to member nations that have not paid their financial obligations, asking them to do so as soon as possible.



In this connection, the Council recommends appealing to the Ministry of Communication of Senegal (host country), the chairmen of executive organs of the agency (CIG and the Conference of Ministers) and authorities of countries hosting pools and bureaus for the collection of contributions due PAFNA.

Concerning information production of the agency, CIG expressed satisfaction with the growing number of national agencies participating in PAFNA activities. In addition, deeming that the agency is moving more and more into the field of the gathering and dissemination of information and that it could strengthen its position by the production of features and other basic articles (reporting), CIG has recommended the creation, in the national agencies, of desks that would produce financial, economic and sports information.

The Council also recommended a study on relations between African national press agencies and world agencies (REUTER, the AFP, UPI, AP). This study would suggest the possibility of generating resources for national agencies thanks to the sale of their production (economic bulletins and features), as well as the possible establishment of a photo department in order to find extrabudgetary resources for PAFNA. The study should also propose ways to speed up marketing of PAFNA production.

On the technical level, CIG recommends a gradual modernization taking the infrastructures existing in the pools and member states into consideration. It encourages the general director, in cooperation with UNESCO, SONATEL (National Telecommunications Company of Senegal) and member nations, to pursue efforts aimed at beginning satellite transmissions on an experimental basis within the framework of the Intelsat/Share project.

Concerning cooperation, CIG, in cooperation with UNESCO, recommends the continuation of efforts aimed at finding financing to carry out projects in the PAFNA master development plan. For such a purpose, possibilities of cooperation and assistance must be utilized with information agencies in nonaligned countries of the Arab League and BADEA [Arab Bank for African Economic Development].

The Council encourages the general director to establish mutually advantageous relations with financial institutions and donor organizations in countries having expressed the desire to help PAFNA to achieve its objectives. In addition, CIG adopted a resolution concerning amendment of Article 14 of the agreement establishing PAFNA. That resolution, which must be filed with the OAU Secretariat, stipulates that CIG must be authorized to act as a permanent advisory organ on information matters relating to Africa between two sessions of the Conference of African Information Ministers.

The work of this fifth special session, which brought together delegations from the 16 member countries of CIG, six observer nations, representatives of the secretary general of the OAU, UNESCO, the ITU [International Telecommunication Union], BAD [African Development Bank] and national liberation movements, was presided over by the Zimbabwe minister of information and telecommunications, Nathan Shamuyarira.

11,464  
CSO: 5500/4

GHANA

INTERSPUTNIK MEMBERSHIP TO INCLUDE GHANA

AB051035 Accra Domestic Service in English 0700 GMT 5 Feb 87

[Text] The secretary for information, Kofi Totobi-Quakyi, has declared Ghana's intention to become a member of Intersputnik, the Moscow-based space communications organization. Mr Totobi-Quakyi made this known in Moscow at a meeting with the director general of Intersputnik, Spartak Kurilov, as part of a 10-day official visit to the Soviet Union at the invitation of the Union of Soviet Journalists. He also declared Ghana's preparedness to become a service center for the West African subregion.

Mr Totobi-Quakyi announced that initial feasibility studies by technicians at the Nfuntuse earth satellite station indicate that signals from Intersputnik can be picked on 14 degrees. He explained that Ghana's decision to join Intersputnik, which now embraces some 14 countries, is based not only on technical grounds, but on financial and political reasons.

Welcoming the secretary, Mr Kurilov explained that membership of Intersputnik is based purely on a principle of equality and one-member-one-vote basis. He said Intersputnik tariffs are minimal, adding that they are just about one-eighth of what is charged by other similar organizations. Mr Kurilov agreed with Mr Totobi-Quakyi that the information imbalance in the world must be corrected.

/9599

CSO: 5500/16

## SATELLITE EARTH STATION REHABILITATION WORK

Accra PEOPLE'S DAILY GRAPHIC in English 19 Dec 86 p 8

[Article by Debrah Fynn]

[Text]

**NEGOTIATIONS** for a six-million dollar loan to fund the rehabilitation exercise at the Satellite Earth Station at Kuntunse have been completed with the Japanese government.

Accordingly, the NEC and NTC Corporations of Japan have been contracted to instal certain vital communication equipment at the station to link it with a new satellite to be launched by the International Communications Satellite Organisation (ICSO).

Col Kwasi Oppong, Director-General of the Post and Telecommunications Corporation (P & T) who disclosed this said the project which is to start soon will be completed by the end of next year.

Col Oppong was speaking at the final session of the just-ended seminar for Chief Executives in Accra on Wednesday. He stated that the rehabilitation exercise will enable the station to meet certain mandatory specifications of the ICSO.

Spar Aerospace of Canada, the original contractors for the earth station failed to instal certain vital communication equip-

ment and abandoned the project in 1981.

The station was constructed with the assistance of the Economic Development Corporation of Canada and was meant to put Ghana on the international telecommunications network.

Touching on lessons learnt by the P & T on the Spar affair, Col Oppong said to avoid past mistakes the corporation has worked out a strategy under which contractors will be paid only when they had completed their contracts.

He further disclosed that negotiations are far advanced for the installation of an international telephone switch at the Accra North Post Office to link the satellite station.

A French Company, Caisse Central de Co-operation Economique has been approached to fund the project which he said is estimated at about C6 million.

The Director-General said a French contractor, Alcatel will start work on the project soon after negotiations are completed.

/9274

CSO: 5500/37

## NEW RADIO STATION LAUNCHED IN UPPER EAST REGION

Accra PEOPLE'S DAILY GRAPHIC in English 5 Dec 86 p 3

[Article by Fritzal Abban]

[Text]

**DECEMBER 3, 1986,** marked a great milestone in the annals of broadcasting in Ghana and in the lives of the peoples of the Upper East and West Regions. Somewhere in the north-eastern corner of the country, precisely Bolgatanga, the capital of the Upper East Region, history is unfolding fast with the commissioning of the new ultra-modern radio station.

The Ghana Broadcasting Corporation has broken a new ground with the commissioning and introduction of the URA-radio FM (Frequency Modulation) transmission on Radio 1 for the Upper East and West Regions.

The main station is at Bolgatanga and it is supported by a transmission station at Han in the Upper West. For the first time in the history of Ghana, FM signals are radiating from the antennas of two five kilowatts transmitters each at Bolgatanga and Han and colour TV signals from another two five kilowatts transmitters at Bolgatanga.

The URA-radio project was conceived as a pilot scheme under the Upper

Regional Agricultural Development Programme. URADEP, in 1979. The need was felt to establish a rural radio station to disseminate programmes in local languages as an effective means of involving small-scale farmers and their families in development.

A Radio Training Department was therefore opened at the Institute for Field Communication and Agricultural Training, IFCAT, at Navrongo in the Upper East. Initially, 21 persons were selected to be trained as broadcasters and radio programme producers for this broadcasting department of URADEP.

### TRAINEES

The first five trainees were partially trained in Holland in December, 1979, while 16 others completed their training in May, 1980. A second course for another 21 URADEP broadcasters started in August, 1980.

The staff of the Radio Training Department consisted of a Ghanaian head of department, a Dutch consultant and a Ghanaian training officer. They were supported by guest lecturers from Ghana and the Netherlands who gave trainees special

instructions in programme planning, feature production, drama and technical aspects of radio and studio technique.

The project, which is seven years behind schedule has finally been completed by Messrs A Lang Ghana Ltd. and equipped by two international electronic companies, Nippon Electronic Company, NEC, a Japanese electronic company, which installed colour TV transmitters and Dale Electricals of Britain which installed FM radio transmitters.

The official commissioning after the completion of the project had had to be postponed twice due to various reasons. While the station waited to be commissioned, actual work was going on at the station in the form of test transmission.

This was started on June 4 this year as part of the 7th anniversary celebrations of the popular June 4, 1979 uprising. Since then, transmission has gone on till date. With T.V. transmission, the test just started only some couple of weeks ago although installations were completed long ago.

The test radio transmission since the past seven months has been in the three major languages in

the Upper East and West Regions. These are Gurune, Dagaari and Kusaal as well as English.

With the commissioning, the station swings into full operation and a considerable portion of programmes is expected to be of local production. The remaining air-time will be used to relay national programmes from Accra.

## TRANSMISSION

The seven months test transmission period have not passed without problems. Programme producers and the news department have been confronted with "artificial" problems like immobility to make contacts with artists for the smooth running of programmes.

Part of the training for the URA-Radio programme staff entailed field trips for on-the-spot recording of local materials and authentic feed back from farmers.

At least, this has not been feasible over the past seven months for lack of transport for the purpose. The delay of the project has caused the station so many facilities.

At the moment, only one landrover out of the three at the station is on road. A second one which comes on and off the road is just not road worthy.

All said and done the station is now commissioned. Let us see a drastic change in the administration of the place for effective and efficient service to the people.

As already stated, the URA-Radio F.M. station was jointly conceived with the introduction of colour TV transmission in the Upper East and West Regions.

21 years after black and white TV transmission was introduced in Ghana on July, 31 1965, GBC-TV has broken new grounds, by going colour. GBC-TV began its first transmission of colour to the people of the Volta, Eastern and the Greater Accra Regions on March 6, This year.

On April, 26, 1986, GBC-TV transmitted colour to the people of the Western and Central Regions. It was expected that viewers in Ashanti Region

would be able to see colour transmission last July.

In line with its general programme of going entirely colour by the beginning of next year, 1987, the two Upper Regions were provided with a colour transmitter at the URA-Radio complex at Bolgatanga and Han. This was under the Ghana Broadcasting Corporation's general rehabilitation programme.

Now, with the construction of a microwave link connecting Bolgatanga completed, TV transmission has been made possible in the Upper East and West Regions. What is more, the two regions go straight into colour TV transmission to start with.

With the inclusion of the two Upper Regions, colour transmission to audiences in the country now covers about 80 per cent of the total area of the country.

The GBC-TV colour project was initiated by the PNDC. However, the present achievement became a reality after the Japanese Government made available a grant totalling about 8.7 million cedis to aid the project. This was in appreciation of efforts by the PNDC to rehabilitate GBC-TV.

Nippon Electronic Company, NEC, a Japanese electronic company supplied and installed colour transmitters at Ajankote in Greater Accra, Jamasi in the Ashanti Region, Kissi in the Western Region and Bolgatanga in the Upper East Region.

According to reliable source close to the station, there are enough spare parts and efficiently trained technical personnel to maintain the NEC transmitters.

The commissioning of both sound and TV transmission therefore marks a turning point in the lives of the listeners and viewers in the Upper East and West Regions.

This throws a challenge to the entire staff of the URA-Radio FM station to provide effective and efficient service to the listening and viewing public.

When this is done, the golden rule of broadcasting to inform, to educate and to entertain would have been achieved.

## BRIEFS

ARABSAT GROUND STATION--Khartoum, 9 Feb (SUNA)--Work on the construction of the Arabsat ground satellite station in Sudan will be completed in July. This announcement was made by Hasan Ahmad Hidribi, chairman of the board of directors and director general of the General Telecommunications Authority. In a statement in Khartoum today, Hidribi said that the ground station, which is being constructed in the Umm Haraz area south of Khartoum, will link Sudan with all the Arab countries except Egypt, which did not join Arabsat. Hidribi also said that the project to construct a telecommunications network among the African states, which was recently discussed at the conference on the development of telecommunications in Africa, has been completed except for the segment that links Sudan with Ethiopia--and there are problems in financing that segment as well as other problems--as well as a similar segment that links the countries of West Africa. Hidribi recently returned to Sudan following a visit to Tunis and Cairo. [Text] [Khartoum SUNA in Arabic 1748 GMT 9 Feb 87] /9604

SUDANESE-EGYPTIAN MICROWAVE PROJECT--Khartoum, 9 Feb (SUNA)--Sudan and Egypt have agreed to operate the Khartoum-port Sudan-Jeddah-Cairo microwave project with a capacity of 12 direct channels following the completion of the 'Atbarah-Port Sudan microwave project in the near future. It was also agreed to upgrade the efficiency of the Wadi Halfa ground station and to link it to the new station in the area, thus providing 12 new telephone channels. This was stated today by Eng Hasan Ahmad Hidribi, chairman of the board of directors and director general of the General Telecommunications Authority. He added that this was agreed upon during the recent visit to Cairo by Sawfino Wani, minister of transportation and communications, and was included in a joint protocol between the two competent ministries in the two countries. Hidribi added that the protocol also covers the training of Sudanese technicians and the exchange of expertise between the two countries in the field of transportation and communications. [Text] [Khartoum SUNA in Arabic 1500 GMT 9 Feb 87] /9604

CSO: 5400/4605

ZIMBABWE

BRIEFS

REGIONAL TELEVISION CENTERS--The government plans to install television sets at designated centers in all 55 districts of the country to bring information to the majority of the population. According to the secretary for information, Comrade Justin Nyoka, the (?number one) priority of the Ministry of Information is to open information centers in rural areas. The comrade [words indistinct] when handing over five television sets and videorecorders to the Midland governor, Comrade Transo Makome, yesterday. He said his ministry [words indistinct] rights and [words indistinct] for national development. [Text] [Harare Domestic Service in English 0600 GMT 17 Jan 87] /8309

CSO: 5500/36

MOSCOW: BBC BROADCASTS, 'SUSPICIONS' COULD HURT RELATIONS

PH121615 Moscow SOVETSKAYA KULTURA in Russian 5 Feb 87 p 7

[Article by B. Belitskiy: "The Two Faces of 'Auntie,' or How the BBC Tries To Make Us Feel Hostile Toward Our Own"]

[Text] "Search at anything -- any anti-Soviet literature or newspapers! Search at anything!" [deliberate mistranslation to reflect misuse of Russian -- see graf three] Do you understand the meaning of these phrases? We do not. Although... with a great deal of effort one could obviously guess....

Well, let us have another try at grasping the meaning of these lines: "Search at anything -- any anti-Soviet literature or newspapers! Search at anything!" This little collection of words was spoken "in Russian" on television screens throughout Britain during the showing of another anti-Soviet "hit" entitled "Foreign Affairs." The author of the play, one John Shaw, had clearly set himself the task of thoroughly frightening the increasing number of British people planning tourist trips to the USSR. In the course of the play, "Soviet secret police" agents burst into the room of a Moscow hotel where a pretty English tourist called Susan is staying and carry out a search. Evidently relying on the knowledge of Russian he acquired while training at Sandhurst Military College, the author -- with the directness of a true martinet -- has one of the "agents" utter the words quoted above -- in Russian, for greater "authenticity."

However, the liberties taken with Russian grammar by the BBC in this production pale in comparison to the liberties taken by the BBC, and its Russian Service in particular, with the facts of Soviet reality. The impression is even created at times that the only things in our lives of interest to this service are those which can somehow be exaggerated or even simply distorted for the purpose of serving the hidden aim of trying to teach us not to love our country, to put it mildly.

These kinds of suspicions, incidentally, sometimes not only creep into the heads of those for whom these broadcasts are intended. Recently, in January, the BBC Russian Service broadcast an interview with its "boss" -- John Tusa, head of the corporation's External Services. During the interview he was asked how closely he follows the Russian Service broadcasts and whether he is confident that any "dissident" who is a firmly established member of the staff will not at times give vent to his hatred of everything Soviet and try, with his "contribution" to the broadcasts, to damage Anglo-Soviet relations? Mr Tusa assured his questioner that there are absolutely no grounds for these fears....



But how can this be? A somewhat different opinion is held, for example, by Aleksandr Liven, who was head of the Russian Service for a long time and was, of course, on more than nodding terms with its members. In a conversation broadcast by the BBC in English, he directly admitted that the recent "additions" to the Russian Service are predominantly people who have either been stripped of their Soviet citizenship for activity intended to damage the USSR or who left the country of their own accord because of their irreconcilable hatred for it. Moreover, according to him, there have even been cases of these people compiling broadcasts emanating such savage malice toward the USSR that the British Foreign Office has deemed it necessary to intervene and somehow restrain the ardor of the Russian Service for fear that this kind of broadcast could cause irreparable damage to Anglo-Soviet relations.

Here is a curious testimony from NEW SCIENTIST, the influential British science journal: "An unpleasant surprise awaits the unsuspecting Englishman who accidentally tunes into a BBC foreign broadcast in English. The cloyingly unctuous voices of the broadcasters and their manipulation of information which is totally obvious to any intelligent person are rather reminiscent of the chauvinistic fervor that once prevailed the British newsreels. The spirit of the 'cold war' is clearly still present in these broadcasts...."

The BBC is very fond of vaunting its "independence" and "objectivity." Indeed, when the BBC was still in the process of being created just over 60 years ago, the leaders of British bourgeois parties showed a certain degree of "state wisdom."

Lloyd-George, Baldwin, and Macdonald were capable of foreseeing that if the BBC were to be created as the mouthpiece of only the party in power at any given moment, the corporation inevitably would be used as a football in the political struggle between parties. This certainly would reduce its effectiveness as a propaganda organ of the "establishment" as a whole, that is, the ruling class. Conversely, neutrality in the struggle between the bourgeois parties could give the BBC a general aura of neutrality and objectivity and thereby increase its effectiveness as a propaganda organ of the ruling class.

Hence the decision to make the corporation independent of the government to a certain extent, an organ which would remain neutral in the struggle between the bourgeois parties — similar to the British monarchy and an equally faithful servant of the "establishment."

The reservation "to a certain extent" in the previous sentence is not accidental. The fact of the matter is that the Conservatives recently have begun to do their utmost to reduce even this measure of the BBC's imaginary "independence." Quite recently, at the end of January, news came that Alasdair Milne, the BBC director general, had resigned. Although official reports say Milne left "of his own accord," the British mass media immediately voiced the quite justified supposition that he had been forced to give up his position under pressure from the ruling Conservative Party leadership and, in particular, party chairman Norman Tebbit.

Milne had intended to leave back in 1985 when, under pressure from the Conservative government, the showing of a BBC documentary giving a fairly accurate picture of the situation in Northern Ireland was banned. On that occasion, he remained in his position, but, at the end of January this year he came under even greater pressure from

the Conservative elite. Tebbit could not forgive the BBC for the fact that during the American air attacks on Libya from British airfields, the BBC news found it impossible to keep quiet about the wave of protests these aggressive actions caused throughout Britain. Moreover, the government succeeded in banning the television showing of a BBC documentary criticizing Britain's intention to launch a spy satellite to intercept radio broadcasts from a number of European and Middle Eastern countries.

Milne was also criticized in right-wing circles for the "Russian Season" held at the end of last year on BBC Radio 3, in the course of which British radio listeners were able to hear 120 very interesting programs of Russian classical music, works by Soviet composers, and Soviet plays.

Among the opponents of the "Russian Season" who have been made much of by the Russian Service is Professor Richard Freeborn, who is, alas, a lecturer in Russian literature at the very respectable University of London. "Propaganda" was his tendentious, unequivocal verdict on V. Vishnevskiy's "Optimistic Tragedy," for example, which was included in the "Russian Season" program.

Those who failed to include works by Bulgakov, Shvarts, and Zoshchenko in the program were also hauled over the coals, as they say, in the same commentary. But who, if not the organizers of the "Russian Season," that is, fellow BBC colleagues, should have been criticized by the Russian Service? They were at liberty to freely choose works by any authors. If the aforementioned Soviet writers were not included in the "Russian Season" program -- writers who are highly popular, incidentally, not only in Britain but also in the Soviet Union, whose plays are performed in our country's theaters, and whose books are published by our publishing houses -- if they were not included in the program, which was generally compiled with great taste and a sense of sincere respect for the Russian and Soviet cultural legacy, then Radio 3 obviously had its reasons for this.

As a whole, the "Russian Season" broadcasts made an indelible impression on listeners, which was noted in the many observations by critics published in the London press and in the letters from ordinary English people sent to the USSR State Committee for Television and Radio broadcasting, in cooperation with which the program was stated.

Listener Michael Born from the city of Leeds wrote, for example:

"Having heard the concert of Soviet music recorded in Moscow and recently broadcast on Radio 3, I am eager to thank you for offering this marvelous opportunity to hear these new productions. We have already had a week of enjoyment of this real 'feast' of Russian music and we still have several more weeks to look forward to!"

Yes, "Auntie Beeb," as it is known by members of the corporation, sometimes produces useful programs. We will not deny this. And these programs meet with a warm response from Soviet people, who respect the great professionalism of the BBC, which has produced a great many excellent television films estimated at their true worth by our viewers.

But you inevitably ask yourself the question: Which is the true face of "Auntie Beeb" -- the one seen during the "Russian Season," which aroused such an ardent, grateful

response from listeners, or the face of its Russian Service, which conceals its hatred for everything Soviet with difficulty?

One involuntarily recalls the profoundly symbolic tale by the English writer Robert Stevenson about the good Dr Jekyll, who brought joy to people but who occasionally turned into Mr Hyde, who exuded malice and hatred. Does not "Auntie Beeb" undergo the same transformation? In any case, Soviet people will always be happy to receive Dr Jekyll into their homes but they are unlikely to stand Mr Hyde for very long....

/9599

CSO: 5500/15

## BRIEFS

FRG TV-RADIO PROTOCOL--Bonn, 12 Feb (TASS)--A working protocol on cooperation for 1987 between the USSR state television and radio and the West German television and radio "Westdeutscher Rundfunk" has been signed in Cologne. The document envisages exchanges of television materials on some of the most important events in the life of the USSR and the FRG, including the preparations in the Soviet Union for the celebrations of the 70th anniversary of the Great October Socialist Revolution and the 65th anniversary of formation of the USSR. Both sides have agreed to help each other in the preparation of broadcasts about culture, science, and the art of the two countries. The signing coincides with the 10th anniversary of cooperation between the USSR state television and radio and "Westdeutscher Rundfunk." [Text] [Moscow TASS International Service in Russian 0710 GMT 12 Feb 87 LD] /9738

LENINGRAD, EAST EUROPE COMMUNICATIONS--Leningrad, 7 Feb (TASS)--As of today, automatic telephone communication has been established between Leningrad and a further six cities in the European socialist countries. Leningraders now have high-speed links with over 100 cities of Bulgaria, Hungary, GDR, Poland, Czechoslovakia and Yugoslavia. [Text] [Moscow TASS International Service in Russian 1043 GMT 7 Feb 87 LD] /9738

CHUKOTSK TV STATIONS BEGIN OPERATION--Chukotsk Autonomous Okrug--Together with the first sun since the polar winter, the television screens have started to blaze in the apartments of the Chukotsk settlements of Aliskerovo and Pogyndino. "Moskva" television stations have been commissioned here. The equipment, ensuring a good quality of reception for the first all-union channel, is working precisely. The Bilibino communications workers took part in setting it up and tuning it. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 13 Feb First Edition 87 p 2] /9599

BROADCASTING AGREEMENT WITH PRK--Phnom Penh, 31 Jan (TASS)--A working protocol has been signed on cooperation and exchanges in the sphere of television and radio for 1987-89 between Cambodian television and the USSR State Committee for Television and Radio Broadcasting. The document envisages the exchange of artistic, documentary, popular science, music, and sports material, as well as radio broadcasts about important events in the life of the peoples of the two countries. Particular attention is being paid to the preparation of programs devoted to the 70th anniversary of Great October and the 10th anniversary of the formation of the PRK. [Text] [Moscow TASS International Service in Russian 1000 GMT 31 Jan 87 LD] /9599

RACE PROGRAM OBJECTIVES ADOPTED BY EEC

Introduction of ISDN

Brussels EEC PRESS RELEASE in English 22 Dec 86 IP(86) 638 pp 1-3

[Article: "'The Introduction of ISDN in the Community Is a Major Step Towards the Era of Modern Telecommunications' Says Vice-President Karl-Heinz Narjes"]

[Text] On Monday 22nd December, the Council finally adopted a detailed Recommendation on the co-ordinated introduction of the Integrated Services Digital Network (ISDN) in the Community, after having given preliminary political backing to the proposal on 18th November. On request by the Commission, the Council adopted a number of amendments proposed by the European Parliament.

The introduction of ISDN can be considered as the second generation of telecommunications following on from simple telephony and telex. It means the development and more efficient use of the telephone network by digital computer-related techniques, allowing efficient data communications and telematics service.

"In order to achieve the step from the first to the second generation of services the Telecommunications Administrations will invest between them some 6-7 bn ECUs spread over the period to 1993, in addition to the investment required to digitise the network."

"The ISDN is a pre-condition for a smooth transition towards the integrated broadband communications from 1995 onwards which is the objective of the RACE [R&D in Advanced Telecommunication Technologies for Europe] program. Integrated broadband communications will offer via one physical connection the full range of services - ISDN services and moving picture."

ISDN will offer from 1988 onwards more efficient telephony, including more advanced telephone services such as notification of incoming calls; more services such as high speed facsimile with an A4 sheet being transmitted in one second and teletex at 100 times the present telex speed and with better quality; and new services becoming available such as interconnection of office systems and computer terminals.

"The unanimous agreement in European Parliament proves the wide awareness of the importance of the introduction of this new nervous system for Europe's future information economy. The European Parliament has laid special emphasis on a strict follow-up and rapid implementation of this Recommendation."

"According to the amendments accepted, the Commission will submit an annual report on the implementation to the European Parliament. Further, special attention will be paid to protecting the privacy of the citizen."

"The Commission will undertake, in support of the Recommendation, a four-year program to promote the co-ordination of efforts and rapid application. It plans to allocate, within its annual budget, an amount of 9 million ECUs to this effect for the period 1987-1990."

[Box p 3]

Technical Sheet--Services To Be Provided in All Member States Starting from 1988.

Basic user access:	144 Kbit/s
(S or T reference point)	(2 x 64Kbit/s "B" channels and 1 x 16 Kbit/s "D" channel)

Primary access:	2 Mb/s
(only at T reference point)	(30 x 64 Kbit/s "B" channels and 1 x 64 Kbit/s "D" channel)

Circuit switched bearer services at 64 Kbit/s

Teleservices at 64 Kbit/s:

- telephony (3.1 Khz)
- Group IV facsimile
- teletex
- mixed mode teletex/facsimile

Additional telephone services:

- |                       |  |
|-----------------------|--|
| - Call waiting:       | Indicates to an engaged subscriber that a new calling subscriber is trying to reach him.   |
| - Closed user group:  | The possibility to have a number of users on a network, who form a special group for taxation, numbering, facilities, etc. and will thus have similar possibilities as a PABX. |
| - Direct dialling in: | The possibility of integrating the numbering plan of a PABX in the national plan, allowing direct access from the public network to a terminal connected to this PABX.         |

Additional detailed specifications, including those for packet switched bearer services, will be prepared in the period from now up to 1990, in the framework of CEPT (European Conference of Postal and Telecommunications Administrations).

#### OSI Standards

Brussels EEC PRESS RELEASE in English 22 Dec 86 IP(86) 639 p 1

[Article: "'The Council Decision on Standardization in Information Technology and Telecommunications Marks an Important Step Towards the Establishment of a Vast Community Market for New Technology' Says Commission Vice-President, Mr. Karl-Heinz Narjes"]

[Text] At its meeting of 22 December 1986 the Council of Industry Ministers adopted a decision on standardization in the field of information technology and telecommunications. That decision marks an important stage in the creation of a large-scale Community market for this new technology. It forms part of the general Community policy on standards and supplements Directive 83/189 by introducing a procedure for prior notification at Community level, which is a necessary addition to take account of the specific needs of this field. To this end it sets out a detailed program for standardization in this sector and stipulates that public procurement bodies must refer to European standards in their contracts.

The numerous different types of equipment that need to be interconnected, particularly via public telecommunications networks, call for more and more detailed and complex information exchange standards to ensure the communication of the data required for the proper functioning of a society which is becoming increasingly dependent on efficient services.

Standards are being prepared, on the basis of a reference model known as OSI (Open Systems Interconnection) developed by the International Standards Organization (ISO), to enable computers and terminals of different makes to communicate in open mode in a manner similar to the telephone and telex. The same basis is being used by the CCITT (International Telephone and Telegraph Consultative Committee) in the telecommunications field to define the architecture of new digital networks and to specify the datacommunications services of the future.

The technical work that has to be done to harmonize such standards in Europe will be entrusted to the European standards bodies CEN [European Standards Committee] and CENELEC [European Committee for Electrotechnical Standardization] and to the CEPT for telecommunications. The task of these bodies will be made easier by the fact that numerous industrialists and, more recently, major users have undertaken to collaborate in this venture and to promote even broader cooperation internationally.

CSO: 3698/A128-E

NEW MICROWAVE SENSORS FOR ERS-1 REMOTE SENSING SATELLITE

Frankfurt/Main FRANKFURTER ZEITUNG/BLICK DURCH DIE WIRTSCHAFT in German 4 Dec 86 p 7

[Text] Frankfurt--The range of applications of remote sensing is becoming ever wider. Remote sensing using microwaves is an area of study that requires the combined use of top technologies in the most wide-ranging areas. At the end of 1984, Dornier System received a contract from the European Space Agency (ESA) for the construction of the first European remote sensing satellite, the ERS-1. Its launch is scheduled for 1987. It is the most extensive satellite project thus far undertaken by ESA. As the main contractor, Dornier System is at the same time the leading underwriter for the approximately fifty companies from Europe and Canada that are involved in the project. Because of the major significance of microwaves for remote sensing from space, only radar instruments--which operate in the microwave bands around 5 and 14 gigahertz--were selected for the primary payload of the ERS-1.

Backscattered microwave signals provide significant information on the geometric and dielectric properties of the objects illuminated from the satellite. This is in contrast to optical signals that primarily result from molecular resonance effects from the surface layers. Microwaves penetrate clouds and make observations possible by day and by night. Microwave remote sensing from space can routinely furnish the desired data at any time. As Philipp Hartl and Harald Schuessler of Dornier System GmbH explain, not only are these data recorded globally, universally and periodically, they also provide in many cases insight into the properties and into the basic processes of the observed objects, insight that could not be gained in any other way.

The space-bound microwave sensors require large, light, thermostable antenna structures. Dornier developed leaky pipe antennae made of very light carbon fiber-reinforced synthetic materials that are metallized with titanium in a special process. They are superior to conventional antennae in many ways, and feature good electrical behavior, in addition to exceptionally good mechanical-thermal properties. Because of its large dimensions, this SAR antenna, developed by Dornier especially for ERS-1, can be launched only in a folded state. It unfolds only after the satellite has reached orbit. The antenna, which is 10 meters long, must then assume the proper geometry, with millimeter precision.



Among the most important goals of the ERS-1 project is the recording of data for scientific use, as well as the processing and distribution of oceanographic data for commercial use, in close to real time. This means primarily a widening of the understanding of processes in the oceans, including the coastal regions and the polar areas. These data are intended to provide a remarkable degree of support for research in the areas of climatology, glaciology or physical oceanography, both on their own and in conjunction with other measured data, either from other satellites or from ground-based measuring systems. Short- and medium-range weather forecasting, including predicted oceanic conditions, can be improved in this way. Information on oceanic currents is of use to fishermen.

Significant benefits are expected from the ERS-1 project in the development and operation of maritime oil platforms and for the optimization of shipping routes. Ice surfaces of 1 year or less are still relatively thin and can be broken by ships. In this way, possible shipping routes can be discovered with the help of microwave remote sensing. Changes in the polar ice cover are of interest to climatology with respect to the carbon dioxide/greenhouse effect. It is also possible to study the ocean surface for pollution.

Part of the instrumentation of the satellite is the so-called Active Microwave Instrument (AMI). This C-band radar is responsible for measuring wind fields and wave spectra. The goal is to have high-resolution photos of coastal areas, the open ocean, ice-covered areas and, experimentally, of land regions under any meteorological conditions. According to Alfred Setzer and Dr Erich Velten of Dornier System GmbH, the Radar Altimeter (RA) is also part of the instrumentation of the ERS-1. This Ku-band radar is intended for measuring wave altitudes, wind velocities and for determining the distance between the satellite and the surface of the ocean or ice surfaces. The laser reflector serves to supplement the RA measurements in determining the exact position of the satellite in relation to earth.

Also in the scientific payload is an infrared ray meter, the so-called Along Track Scanning Radiometer, in combination with a "Microwave Sounder." The radiometer is for determining the temperature of ocean surfaces and clouds as well as for measuring rays. The microwave radiometer is to measure the exact moisture content of the atmosphere. The "payload" also includes "PRARE," Precise Range and Range Rate Equipment, for measuring distance and changes in distance using transponders on the earth's surface. It is likewise possible to adjust for changes in the transit time of signals caused by the ionosphere using "PRARE."

The flow of data between ERS-1 and the ground station consists of measured data and data for satellite monitoring and control. The satellite is controlled by the ESOC mission control center in Darmstadt, which communicates with the ERS-1 onboard computer via the S-band network. The onboard computer controls and monitors the payload instruments, the data transmission system itself and the platform subsystems using a data bus. The most important duty of the ground system, next to monitoring and controlling the satellite and its components, is the acquisition of all transmitted data, the generation and distribution of selected data products in close to real time, the preparation and distribution of fully corrected data products with the appropriate file

structure, as well as the calibration (ordering according to purpose) and quality control of the data.

ERS-1 is to be put into a circular, sun-synchronized low orbit of 675 kilometers from Kourou Space Center in French Guiana using an Ariane carrier rocket. It will then be stabilized in three axes and aligned towards the earth. The normal orbit entails a three-day repeat cycle with 14 and one-third orbits a day, a turn-around time of 100.465 minutes. After separation from the carrier rocket, the unfolding of the solar generator and of the antennae will be carried out autonomously by the satellite platform in a fixed sequence. After the testing and calibration of the satellite, the routine phase with the various measuring operations begins. They are to be interrupted only in the case of emergency, through orbital correction maneuvers. The first mission of the ERS-1 is to have an experimental or pre-operational character. However, there is concern that the true functions of the system be carried out as soon as possible.

12271

CSO: 5500/2453

NEW ASSOCIATION TO COORDINATE EUROPEAN ELECTRONIC MAIL SERVICES

Amsterdam COMPUTERWORLD in Dutch 6 Jan 87 p 5

[Article by Cok de Zwart: "European Electronic Mail Association: A Platform"]

[Text] Eindhoven--The EEMA (European Electronic Mail Association) will be officially established on 24 and 25 March. This decision was made by representatives of the users of electronic mail services, manufacturing, various national PTT's and the academic community in December in Zurich.

The initiators of the EEMA expect the association to make a substantial contribution to the field of electronic mail and message handling systems through promotional and educational activities. Moreover, the EEMA is expected to play a major part in promoting a unified European market, and the founders hope that the EEMA will operate as a forum for users to voice their opinion. The chairman of the provisional board is Eng Ids Zandleven, manager of the communication systems department at Philips.

EEMA Is No Pressure Group

"Twelve organizations attended the meeting in Zurich, including Philips, DEC, Wang, the Irish PTT, Telecom Gold, Geomail, One to One, ICL, and the Erasmus University," explained Zandleven. "The most important tasks in the coming months will be to draw up the statutes and decide on the location of the registered office. We will also have to canvass for members and obtain support from organizations active in the general field of telecommunications, such as CEPT [European Conference of Postal and Telecommunications Offices], SPAG [Standards Promotion and Application Group], CCITT [Consultative Committee of International Telephone and Telegraph], INTUG [International Telecommunications Users Group], ECMA [European Computer Manufacturing Association], and the European Commission. Obviously, a program of activities is also needed." The new chairman believes it is particularly important to establish and maintain good relationships with all existing authorities to allow the EEMA to take an active role in the international consultation circuit. According to Zandleven, initial contacts are most promising.

"Furthermore, I am optimistic about EEMA's success because of its intended goals. It will not be a militant group seeking conflicts and wanting to solve them to its advantage through pressure. Nor does the profile of the targeted membership lend itself to this. We want to reach the right balance between representatives from the business world, both manufacturers and providers of electronic mail services; users; and the national PTT's; supplemented by representatives from the academic world, consultants, and many others."

#### Broad Public for Services

The EEMA wants to promote the development and use of electronic mail and message handling and inform the general public about the advantages and applications of these techniques. "We are thinking of seminars, lectures, brochures, and study groups, but the program of activities remains to be elaborated," says Zandleven.

The major goal is the creation of a platform on which all the interested parties can exchange information, opinions, and analyses. "A discussion group," according to Zandleven, "providing solutions through harmony rather than confrontation."

The EEMA will remain in close contact with its American counterpart, the Electronic Mail Association, which was set up in 1983 and now has almost 60 members, including IBM, AT&T, ITT, Digital, and General Electric.

25059/12828  
CSO: 5500/A015

ORGANIZATION, MANAGEMENT OF NEW CGE-ITT JOINT VENTURE

Paris LE MONDE in French 1 Jan 87 p 17

[Article by Francoise Vaysse]

[Text] The French CGE (General Electric Power Company) and the American ITT (International Telephone and Telegraph) signed in Brussels on Tuesday, 30 December, an agreement merging their activities in the areas of telecommunications, business communications and cables. A new entity--provisionally named Teleglobal Communication NV (TCNV)--was thus born. It ranks second in the world in public telecommunications, just behind the American giant, ATT (American Telephone & Telegraph), first in Europe in business communications and first in the world in cables.

TCNV will be organized under Dutch law, and its headquarters will be in Brussels, in the former offices of ITT Europe. It will have a turnover of \$12.5 billion with about 150,000 employees. It will in all likelihood be composed of a board of directors (chaired by Pierre Suard, head of CGE) and a supervisory council (chaired by Rand Araskog, chairman of ITT).

Six months were needed to smooth out the agreement made in July by the former president of CGE, Georges Pebereau, who is the "intellectual father" of this merger. After the takeover of Thomson telephone in 1983, which assured him of 84 percent of the French public telephone market, he dreamed of giving CGE international stature in the area of telecommunications. This has been accomplished, since TCNV will supply 12 percent of the world market and 45 percent of the European public telephone market.

These six months have been used profitably by his successor to bring this ambition to reality, which was no small task, since CGE is buying up about 250 ITT subsidiaries and corporations scattered through 70 countries. It was also necessary to negotiate up to the last minute with the directors of the Spanish Telephone Corporation, which placed a series of conditions on their participation in the operation: the Spanish firm therefore does not appear in the group announced on Tuesday and, if it finally decides to participate, it will be necessary for it now to buy up the holdings of another shareholder.

Another change since the initial agreement in July: In the interest of industrial coherence, CGE is bringing to TCNV 65 percent of its subsidiary, Lyons

Cables, and ITT its American activities in fiberoptics. Conversely, the 24 percent retained by ITT in the British Standard Telephones and Cables Public Limited Company (STC) are not included in the agreement: the British firm's activities in cables would have duplicated the activities of certain of CGE's companies.

The initial financial plan, which provides for grouping the interests of the European partners in an intermediary holding company, has also been simplified: 55.6 percent of TCNV will be held directly by the CGE group, 37 percent by ITT and 5.7 percent by the Belgian General Corporation. A last-minute surprise: Credit Lyonnais will hold 1.7 percent. The SGB [Belgian General Corporation] thus is contributing \$250 million to the new group, compared with \$75 million by Lyonnais. The amounts paid into ITT will therefore total \$902 million, of which \$577 million are for CGE. Furthermore, the TCNV subsidiaries must repay ITT the debts they have contracted with the firm.

#### Sizable Risk

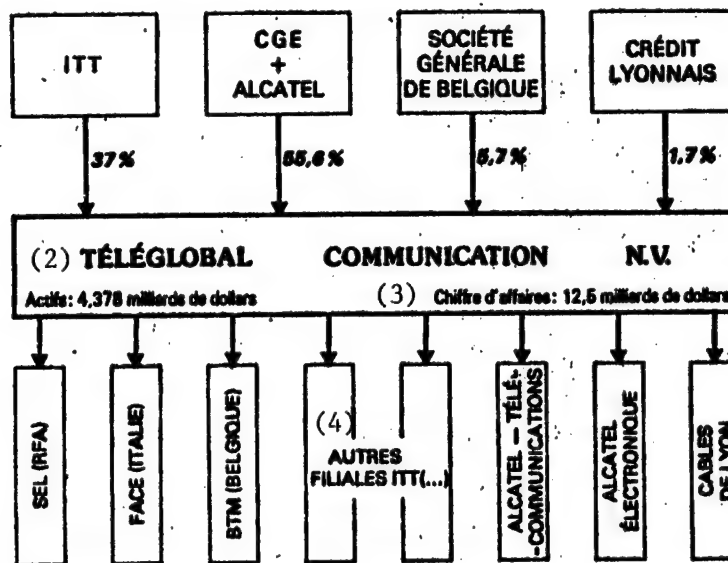
In separating itself from its subsidiaries in telecommunications, ITT is, in a way, cutting itself off from its historic origins. Actually, the company came into being in the 1920's through the dropping of ATT's international activities in communications. But the American group, which in 1985 did only 25 percent of its business in telecommunications, had some technical disappointments with its electronic telephone exchanges, called "System 12." It was forced to give up selling them in the United States in February 1986.

In taking over the leadership of the operation, CGE is also taking a sizable risk and changing its industrial profile. The group will realize henceforth a business turnover of 130 billion francs and will employ 240,000 persons, thus becoming the third largest French industrial firm and the 30th in rank worldwide. From now on telecommunications will account for 60 percent of its activity (35 percent at present), the rest being in the field of energy (65 percent at present).

It all remains to be carried out, and it is a question of "turning over the store" in November. Mr Suard believes that profits after taxes for TCNV will account for about 2 percent of its business in 1987. He plans to manage the group in a very decentralized manner, except in the area of research. In public telephones it will be a question of developing harmoniously the various product lines of TCNV: the E 10 exchanges of ALCATEL, as well as those inherited from Thomson and the ITT System 12.

The other risk is a financial one: CGE will have to consolidate its situation. Where will it find new money to ensure the smooth operation of the business? Suard hopes--and he is not the only one--that his group will be privatized quickly in order to appeal to capital markets. We do not know if CGE will become the famous big industrial group whose privatization was announced by Mr Balladur for the end of the first half of 1987.

(1) **L'organigramme du nouveau groupe**



1. Table of Organization of the New Group
2. Assets: \$4,378 billion
3. Turnover: \$12.5 billion
4. Other ITT subsidiaries

8735/8918  
CSO: 5500/2452

NORDIC SATELLITE TV COMPANY SET UP

LD310600 Helsinki International Service in English 0930 GMT 30 Jan 87

[Excerpt] The Norwegian Scane-TV Company announced on Thursday its intention of beginning Nordic satellite television transmissions later this year. The company aims to provide a single-channelled commercial program, which will be seen over the whole Nordic region as a direct competitor to other European satellite newcomers.

Scan-TV has already discussed cooperation with the Finnish Commercial Television Company. Matti Huuhtanen has more on the story.

[Begin Huuhtanen recording] For many years now the five Nordic countries, but particularly Finland, Sweden, and Norway, have talked about joint Nordic television cooperation through satellite television. First there was Nordsat, but that has all but been buried. It was replaced by the Tele-X project, but even this has had considerable birthpangs, and it won't be for a few years yet that the Tele-X will be providing Nordic Television programs via satellite.

It seems that commercialism is the name of the game today, as was recently witnessed here in Finland when the Finnish Broadcasting Company joined forces with the Finnish Commercial Television Company, known here as MTV, and the Nokia electronics concern to form Finland's third national Television channel, Channel Three. Channel Three, which will run television commercials, was mainly formed to ensure advertizing income for the commercial company and the Finnish Broadcasting Company, which otherwise would have gone elsewhere.

Now it seems that Scan-TV, which hopes to begin broadcasts as early as next autumn, will get in before the Tele-X scheme. Scan-TV is optimistic, and already preliminary agreements have been discussed with Finland's commercial MTV company to begin transmissions, which will be beamed via the already existing Intelsat-5 Nordic satellite from Helsinki. The company will naturally need permission, and it will be handing in applications to the Finnish, Swedish, and Danish Governments as early as next month.

Scan-TV, which will be financed purely through advertising, will provide a family and news channel, in other words, entertainment for the whole family, interspersed with news every hour. Fifteen to 20 percent of the programming will be Nordic, produced or made locally in Scandinavia. The remainder will be bought from outside.

/12913

CSO: 5500/2458



BRIEFS

**TURKEY-FRG SATELLITE COMMUNICATIONS**--Ankara (ANKA)--A 238-channel satellite communications system between Turkey and West Germany was inaugurated. Post and Telecommunications Minister Schwarz-Schilling opened the West German Usingen ground station and held the first conversation with Minister of Communications Veysel Atasoy. [Text] [Istanbul CUMHURIYET in Turkish 7 Jan 87 p 14] 8349

**EUROPEAN HDTV COLLABORATION**--Four European companies are collaborating to develop a 50-Hz high-definition TV system (HDTV). It will be based on the MAC standard and means that the present European standard of 625 lines will be increased to about 1,000 lines. The possibility of using a different aspect ratio will also be studied. Earlier this year the European countries opposed the establishment of a world standard for HDTV by the CCIR meeting in Dubrovnik, Yugoslavia. The proposal at the CCIR meeting was based on a Japanese system using 1,125 lines and 60 Hz. The proposal was supported by Japan, the United States, and Canada. The European HDTV work is now being done by Thorn EMI of Great Britain, Robert Bosch of West Germany, Philips of the Netherlands, and Thomson of France. The goal of this project is to create a compatible HDTV system that could be used throughout Europe. This is believed to be the largest of the Eureka projects, in which 19 European countries are participating. The four companies are planning to create a system that can be introduced in several stages. The project participants hope to establish standards for the entire transmission chain, from the generating equipment in the studio to the home TV receiver. During the first phase, parameters will be established for production and transmission standards. The target date for this work is April 1987. On the basis of these parameters, an HDTV chain will be constructed during the second phase of the project. So far, more than 40 companies have announced that they will contribute to the research effort. [Text] [Sundbyberg MODERN ELEKTRONIK in Swedish 10 Nov 86 p 10] 9336

**FINLAND DEVELOPS CHINA'S TELEPHONE SYSTEM**--Finland and China have appointed a joint group of experts to develop China's telephone system. An agreement on this group's work was recently signed when Finnish Traffic Minister Matti Luttinen, on a visit to China, met with that country's Postal and Telecommunications Minister Yang. During his visit, Minister Luttinen also opened a Finnish section at a large telecommunications exposition in Beijing. Finnish companies participating in the exhibition were Nokia, Neste, Vaisala, Finre, and Telecon. During his stay in China, Minister Luttinen also held talks with representatives from the Railway, Traffic, Electronics, Radio, and Film Ministries. [Text] [Sundbyberg MODERN ELEKTRONIK in Swedish 24 Nov 86 p 9] 9336

FINNISH TESTING SYSTEM FOR TELE-X SATELLITE--The Finnish company VTT Technology Oy, whose most important subcontractor is the Telecommunications Technology Laboratory at the State Technical Research Center, has signed an agreement with Rymdbolaget of Sweden for the delivery of satellite testing systems. The testing systems, which are called IOTS, will be delivered during 1987. The system is to be used to test Tele-X satellites. It must be possible to control the functions of the receiving and transmitting equipment on board the Tele-X satellite from earth stations. Later, Rymdbolaget intends to offer testing services to other organizations that use satellites, as well. The agreement is seen as an important opening toward European space cooperation within the framework of the ESA (European Space Agency). The delivery date will effect, to a certain extent, the timetable for launching Tele-X. It now appears that the satellite can be launched into space during the summer of 1988. [Text] [Syndbyberg MODERN ELEKTRONIK in Swedish 24 Nov 86 p 9] 9336

CSO: 5500/2446

## COMMAND, CONTROL SOFTWARE IN SPACE PROJECTS

Brussels INDUSTRIE MAGAZINE in French Nov 86 pp 83-87

[Article by Brigitte de Wolf-Cambier: "Sait: Space-Assisted Communications"; first paragraph is INDUSTRIE MAGAZINE introduction]

[Text] The recent Challenger and Ariane failures have put most space projects on hold. This poses a crucial problem for Sait Electronics, which has just made a timid entry into the Belgian space consortium.

Thanks to its space technology, Sait has assumed a strong position in the telecommunications market. Space plays an important role in technology development worldwide. The use of satellites allowed us to progress beyond cable networks at a time when optical fibers were still relatively expensive. Space has been the stimulus behind studies needed to develop and improve telecommunications networks. Indeed, if a company like Sait has become involved in space technologies, it is primarily because space has allowed it to reach the forefront of the industry and thus take its place among the leaders. An average-sized company in a world of giants, it has managed to remain independent even while allying itself with international companies, notably through joint ventures. Today, Sait Electronics employs around 900 and has revenues of 4 billion Belgian francs, not counting its involvement in other groups or subsidiaries.

### Divisions With Diverse Activities

For the data processing division, space applications are sophisticated enough to justify development of intelligent control and command equipment (C3: command, control, and communication). Sait Data Processing has been working in space applications for several years. It primarily designs and produces application software and thus is involved with the monitoring and synchronization of various satellite communication stations. As a result, it recently acquired the data processing management responsibility for the monitoring and control center of the European Eutelsat organization.

According to Pierre Declerck, communications department manager, both work methods and space technology have contributed to Sait's enviable position in such hi-tech markets as military aeronautics applications, data processing,

and real-time control and management applications. For example, the company has obtained the STIB [Belgian Regional Transport Company] contract for centralized management of public transport. Sait has also won a contract for the command center of a large solar energy station in Spain.

In addition, a substantial need for small satellite telecommunications stations is emerging in the maritime sector, due to the increasing demand from shipping for satellite functions: first, in improved data processing, telex, and voice communications; second, in new navigation technologies. For example, ships can use an on-board computer to obtain their exact position at sea from a satellite.

The industrial division includes all technical activities (R&D, studies, manufacturing). It involves about 200 people, including 50 engineers or scientists.

Through ESA [the European Space Agency], Sait Electronics has participated in the Promar program, the logical successor to the Prosat program whose objective is the development of shipboard terminals including antennas, frequency conversion equipment, and the necessary electronics for translation from a voice signal or telex. These terminals will communicate with the Immarsat organization's satellites. Because the first generation terminals were very bulky and rather expensive, it is reasonable to expect a second generation of terminals around 1989. Less expensive and smaller, these could be placed on other mobile equipment (trucks, planes, or small capacity ships) thus making satellite telecommunications available to them. This second generation is in the works and a prototype has already been produced. Sait Electronics has focused its attention on two key points: the antennas and the stabilization system. To date, many types of antennas have been tried. Certain mechanical problems still need to be resolved. Five engineers and an equal number of technicians are working to design these computer-controlled functions.

At the same time, Sait is participating in the development and management of coastal stations (CES: Coast Earth Stations).

The industrial division designs semiconductors (LSI), while the Mietec company at Oudenaarde develops circuits. Assembly and manufacture of mechanical parts and consoles are carried out by Sait itself.

25051/9738  
CSO: 3698/A034

FINNISH NOKIA, SALORA, MOBIRA INTERESTED IN RACE

Helsinki HELSINGIN SANOMAT in Finnish 22 Nov 86 p 37

[Article: "Finland May Be Late for RACE Project"]

[Text] The possibilities that Finnish companies will be included in the first phase of the RACE Project of EC [European Community], starting at the beginning of next year, may be endangered. At least this is what Ville Hentinen, manager of Nokia Oy's Research Center, is concerned about.

The name of the RACE Project comes from the words Research and Development in Advanced Communication Technologies for Europe. The project aims at developing a telecommunication network extending over all of Western Europe, a so-called wide-lane network, based on using optic fibers. The network would enable simultaneous transmission of voice, picture and data.

The 18-month preliminary study phase of RACE has ended and the first phase will be started, in which a network and associated equipment will be built as an experiment.

In addition to Nokia Elektroniikka, Salora and Mobira, subsidiaries of the concern, are interested in the project. Some other electronics companies also would like to be involved.

Although the project was initiated by EC, it is essentially open to European countries outside EC. Finland, among others, has expressed its desire to be included, but so far the mixed commission between EC and Finland has not made a decision about the forms of participation.

In Finland, the project is administered by TEKES, i.e. Technological Development Center. According to Hentinen, TEKES has actively promoted the issue and cannot be blamed for the delay. Besides Finland, other EFTA countries are in the same situation, except Norway, which is supposed to have received a special permit.

Hentinen considers the reason for the delay to be simply the bureaucracy of EC, not known to be among the easiest.

Although the project will be implemented under the supervision of the EC Commission and countries, in practice, it is based on the collaboration between the companies. The companies wishing to be included have to name the sub-projects in which they wish to be involved, and the sub-projects are then divided between several companies for implementation.

The EC Commission has set the rule that there must be the minimum of two companies from the EC countries in each sub-project.

TEKES is currently compiling a list of the Finnish companies interested in RACE and their areas of interest, even though the detailed program of the first phase of RACE is not fully known yet.

#### Nokia Interested in Centers and Transfer Roads

Hentinen hopes that the Finns could, for example, receive a special permission to be included as soon as the project starts next spring. Hentinen believes that it would be difficult to be included after the project has begun and the most interesting areas will then have been reserved.

The first phase is one of the most important parts of the project since it involves the development and testing of the equipment.

Nokia is interested in developing centers, transfer roads and subscriber equipment within RACE. Becoming involved takes time, however, since two cooperative foreign companies must be located for each sub-project and the tasks have to be divided between the parties concerned.

According to Hentinen, RACE is a very important project for Nokia, even if it is a project with only long-term rewards.

The first phase, now to begin, will be completed at the beginning of the 1990's when the test systems should be made to work. The project is expected to generate economically significant activities around the mid-1990's.

The monetary value of the markets which will be born at that time will be large, even though there can now be only speculation about the demand for the services.

12956

CSO: 3698/131

THOMSON-CSF DEVELOPS ENCRYPTION DEVICE FOR DATA TRANSMISSION NETWORKS

Cannes COMMENT ASSURER LA SECURITE ET LA CERTIFICATION DES TRANSACTIONS SUR LES RESEAUX in French 2 Mar 84 pp 1-5

[Paper presented by D. Pons of Thomson-CSF Telecommunications Division to the 2d Worldwide Congress on Computer and Communications Security and Protection in Cannes, France 29 February-2 March 1984: "How To Protect and Authenticate Transactions Through a Communication Network"]

[Text] Awareness of the risks of fraud connected with the operation of data communications systems in the institutional sector and, in particular, in the banking sector is a recent historical phenomenon in Europe.

However, solutions to this problem, particularly solutions which use ciphering techniques, have been the object of important research and development for the past several decades in the military and government sectors, in official institutions, and, in France, in the Thomson-CSF laboratories.

Cryptography has also been enriched by concepts developed in the United States in 1976 and after this, especially in France, by concepts making use of public-key cryptosystems. These developments corresponded to a major concern, that is, the problem of managing the secret elements, which is almost unknown to military and government users as a result of established infrastructure and logistical systems.

Thus, by uniting our traditional competence in the field of ciphering with the most recent academic theoretical advances we undertook the development of a device, the TRC 789, intended to guarantee the security of data transmissions such as bank transactions by means of data communications networks.

This device, on the one hand, guarantees the confidentiality of the data transmitted and, on the other, permits the authentication (data origin and content) by the receiver.

The "confidentiality" function consists in the substitution, during transmission, of clear messages by "enciphered" messages which are incomprehensible to an intervening third party who does not possess the secret deciphering key, which could be considered as a technical deciphering monopoly.

The "authentication" function consists in assigning at the message transmitting source a kind of technical monopoly for generating authentic messages. The criterion of authenticity can be verified by the message receiver so that an intervening third party cannot transmit, modify, or retransmit authentic messages without being detected. In most cases, this means the transmission of "logical signatures" added to messages, which leads to a certain penalty on overall transmission efficiency.

At the level of basic principles, we can already state that the two technical "monopolies" mentioned above are substantially different, but that they both have a secret component (a deciphering key, a signature key) located where the monopoly is situated; and a convention shared by the participants in transactions (the ciphering key and the conventionally agreed signature).

Whereas it seems obvious that the secret components, that is, the keys, must remain secret, it is also true that the conventions must remain inviolate because one might otherwise run the risk of no longer being able either to decipher or to authenticate genuine messages, but might, in fact, accept intruding messages.

Thus, we can see that the problem of the measures established to guarantee the secrecy of the keys and the integrity of the conventions is a crucial one. Broadly speaking, the problem is the management of the keys, which we will discuss later.

With regard to performance, we established the objective of offering maximum transparency compared to existing systems; in particular, this implies:

- automatic functioning

- minimal penalization in transmission efficiency thanks to the transparency of signatures, taking into account the fact that:

Breaking into the system is an action on the transmission which will systematically be detected by the functions of the device; therefore, breaking in should be, according to a classic deterrent effect, rare, even nonexistent, because it is inoperative.

Thus it would not have been sensible to start with solutions that would have systematically and substantially resulted in penalizing transmission efficiency. On the contrary, we had to allow for maximum flexibility permitting the applications to adapt the transmission resources involved in authentication according to their specific requirements.

The search for maximum transparency compared to existing systems led us to opt for the solution of in-line device inserted between the terminal or the computer and the modem.

Thus the device must take into account the operative transmission protocols. The dominant role which packet switching networks such as TRANSPAC are called upon to play led us to opt for a device adapted initially to X.25 networks.



Among the cryptographic systems envisaged for data processing (ciphering and signatures), that is, shared secret key systems and asymmetrical key systems (public keys of the SNA [System Network Architecture] type), we opted for a shared secret key system for two reasons:

--Asymmetrical key systems are poorly suited to fast real time data processing with heavy data flow, which is likely to be encountered (48 kb/s in TRANSPAC)

--Shared secret key systems are perfectly acceptable within closed groups of correspondents who recognize each other and are, therefore, not involved in adversary relationships; however, it is useful to propose methods for the management of the keys in order to permit flexibility in the constraints necessarily connected to the secrecy requirement and to limit the diffusion of a single key, so as to avoid increased risks of compromise.

Thus, for a given communication, only one parameter is used: a secret key, used at the same time as a ciphering key, deciphering key, and signature key.

Summing up, we have been led to define a "classic" algorithm of cryptographic data processing (ciphering, signature) using a shared secret key which guarantees a very high degree of security for heavy data flow (48 kb/s) while at the same time allowing a broad range of possibilities in the management of the keys.

The problem of the management of the keys remains the crucial element in the security of transactions. This is a two-part problem:

- 1) The keys must be secret and remain so;
- 2) They must be identical at both ends of the transmission;

Paradoxically, it is this second condition that is the more difficult to satisfy.

In effect, the secret is restricted property, confined to the device and to the personnel, if any, who handle it. For their own personal safety, one should, therefore, try to avoid having personnel handle the secret component.

On the other hand, the verification of the identity of the keys implies an exchange which, if automated, becomes vulnerable to break-ins because authentication of the identity verification transaction cannot depend on the key which is the object of verification.

Because of this, in the whole process of the management of the keys there exists the postulate of at least an initial secret component which is shared exclusively between the correspondents involved and which involves measures based on reliable equipment and human elements.

According to the algorithms used for the management of the keys, this initial secret component can be used indefinitely to guarantee the security of transactions, up until doubts about the maintenance of the secret are raised.

In this case, the secret component should be changed. The evaluation of risk is not linked to the intrinsic characteristics of the device, but rather to the structural and human environment concerned (for example, a change in the person responsible for security).

We can see that the procedures and measures used for the management of the keys, while providing the conditions necessary for maximum security, must be adaptable to operational structures which are different from one application to the next, from one network to the next, from one client to the next. That is why procedures offered for the management of the keys are varied.

These procedures range from simple hand delivery by qualified personnel with some form of physical storage medium on the receiving devices all the way to the establishment by the network of common key generation and distribution centers using basic key and public key systems listed in directories.

This presentation was intended to show that the design of a security device for transactions necessitates a synthesis of various algorithmic techniques in the interest of maximum operating efficiency.

But, equally true is the fact that the problem of the management of the keys remains the problem for which there is no miracle solution and for which the search for high levels of security will necessitate the development of efficient operating structures.

Cryptography and systems technology allow us to achieve the best foreseeable solutions so that the tasks and material resources mobilized are reduced to a minimum. The choice of one of the multiple solutions offered by the devices will be the result of mutual reflection by security specialists and the operators of a system or a network.

8615/7358  
CSO: 5500/M073

MATRA EYEING WORLD RADIOTELEPHONY MARKET

Paris L'USINE NOUVELLE in French 4 Dec 86 p 23

[Article by Jean-Pierre Jolivet: "Matra Manning the Outposts"; first paragraph is L'USINE NOUVELLE introduction]

[Text] Well positioned in the French market, poised for deregulation, the group is also preparing for export.

A world market growing by 30 percent per year, the likelihood of French deregulation of radiophone communications: These are two opportunities that Matra Communication wants to exploit to maintain the position it has already established through the sale of 10,000 mobile phones this year. The company nonetheless has established its priorities: "Our objective is to supply equipment to future mobile phone network users, rather than to provide services," says Maurice Remy, chief executive officer of Matra Communication.

Radiotelephony (with Fr 400 million in revenues in 1986) is one of the major cornerstones of Matra Communication, whose total 1986 revenues will reach Fr 2.5 billion. Chosen by the DGT [General Directorate of Telecommunications] to supply France's first cellular mobile phone network (Radiocom 2000), Jean-Luc Lagardere's group now ranks with Alcatel as a leader in France, although technical problems have delayed the program.

Since last July, the group has strengthened its position by taking over CGCT's [General Company for Telephone Engineering] private telephony division. Teams from LCT (the research lab of this former subsidiary of ITT, "father" of the RITA [Integrated Automatic Transmission Network] system, have rejoined Matra Communication. They are working on the future 900-MHz cellular digital mobile phone.

The group has international ambitions. It intends to use the French market (with 250,000 potential users by 1988) as a springboard to the export market. Of course, competition is stiff. Sweden's Ericsson dominates the Scandinavian market, one of the most developed. Motorola and ATT benefit from the size of the large American market. Siemens and NEC intend to take advantage of their worldwide sales networks. The French firm thus appears as a challenger in the world arena.

Matra Communication has chosen a pragmatic approach to meet this challenge. It joined forces last September with Finland's Nokia-Mobira, the largest cellular mobile phone manufacturer in Europe. A joint subsidiary, Matra Nokia Radiomobiles, will produce equipment in Chateaudun for marketing by both companies in France and elsewhere. They have already had an initial success: a Fr 40-million contract for a Radiocom 2000 network in Mexico City (4 relays and 2,200 mobile sets). At Matra, which has submitted several bids, it is hoped that this is only the beginning.

25054/13046

CSO: 5500/A010

SELENIA ENGINEERS OUTLINE HIGH YIELD MMIC PRODUCTION

Milan ALTA FREQUENZA in English No 3, May-Jun 86 pp 173-179

[Article by Antonio Cetronio and Roberto Graffitti of Selenia S.p.A., Rome: "A Reproducible High Yield Technology for GaAs MMIC Production;" first paragraph is ALTA FREQUENZA introduction]

[Excerpts] The overall MMIC yield can be increased from approximately 5 percent to better than 60 percent by optimising what appear to be the most critical point of the monolithic microwave integrated circuit (MMIC) technology, such as for example selective active layer formation by ion-implantation/annealing and photoresist lift-off and mask-related problems. In the paper said improvement in yield will be demonstrated by considering a monolithic local oscillator for Direct Broadcasting from Satellite (DBS) receiver applications.

Introduction

Although the technology for fabricating GaAs monolithic microwave integrated circuits (MMIC's) has continuously improved over the past years, some refinements are still necessary, particularly those which are directed towards the improvement of yield, performance and circuit complexity. In fact, before MMIC's can become cost effective they must exhibit good performance reproducibility, and this not only necessitates further improvements in the technological yield but also requires that circuit designers pay more attention to the tolerances of components realized with the available technology and furthermore that they choose circuit topologies which display the minimum sensitivity to said tolerances.

In this article we will outline some of the key features of a technology which is capable of high yield MMIC production. Said technology is based on a stringent control of active layer formation by ion-implantation and a multi-layer resist (MLR) structure technology which minimizes photoresist lift-off and mask-related losses. To illustrate the high yield capability of this technology the relevant results of a monolithic local oscillator for direct broadcast from satellite (DBS) receivers will be presented; in particular we will illustrate how the overall yield of this circuits has increased from approximately 5 percent to better than 60 percent with the introduction.

of the above mentioned conditions.

### Technological Aspects Which Affect the Overall Yield

The major technological difficulties which restrict what might be acceptable yields for production purposes are:

- material related problems and in particular the difficulties in obtaining uniform and reproducible selectively doped substrates for active device fabrication;
- photolithography related problems in particular the difficulty in obtaining uniform and reproducible  $\sim 0.5\mu\text{m}$  line geometries with conventional contact lithography, at the same time minimising photoresist lift-off and mask related losses which can be very high (as much as 50 percent) for submicron features.

### Technological Yield of Active and Passive Components

#### Active devices - MESFET's

The active device technology developed in Selenia is very similar to what by now appears to be, with slight variations from one laboratory to another, a universal technology for GaAs MESFET's, which comprises:

- ion-implantation and corresponding annealing at 850 degrees C for active layer formation;
- Au: Ge/Ni/Au ohmic contacts deposited by life-off and alloyed at 450 degrees C;
- Al or Ti/Pt/Au gate metallizations, also deposited by life-off;
- refractory-gold metallizations (i.e. Mo/Au or Ti/Pt/Au) as ohmic contact "over-layers" and interconnections to other levels;
- chemical vapor deposition of Si<sub>3</sub>N<sub>4</sub> passivation and subsequent

reactive ion etching of the contact windows;  
--"via-hole" and "air-bridge" technology for power MESFET's.

In figure 5 we illustrate SEM photographs of the low noise (N.F.  $\sim 2$  dB at 12 GHz) and power ( $P_o \sim 0.5$  W at 10 GHz) devices fabricated with the technology outlined above and with the innovations presented in section 2.

The low noise device has an Al gate  $0.6 \times 300\mu\text{m}$  and a Ti/Pt/Au "over-layer" on the pad connection and the power device has a Ti/Pt/Au gate  $0.6 \times 1000\mu\text{m}$ .

Because the MESFET's described above are primarily intended as building blocks for eventual MMIC's and not for use as discrete components, then obviously the relative yield associated with the technology is very

important and in particular the d.c. performance yield should be extremely high if high yield MMIC production is the goal.

As shown by the results presented in figure 6, for the low noise device, said technology is capable of near 100 percent yield with overall variations in saturation current  $I_{DS}$ , threshold voltage  $V_p$  and

source gate capacitance  $C_{gs}$  well within the acceptable limits for most

analogue integrated circuit applications. In fact as illustrated by the relative histograms obtained from approximately 80 measurements uniformly distributed on the 2 inch wafer the overall variation in  $I_{DS}$

and  $V_p$  (strongly dependent on material) is within  $\pm 5$  percent and the overall variation in  $C_{gs}$  (strongly dependent on material and

lithography) is within  $\pm 10$  percent. It is interesting to note that a storage at 200 degrees C for 50 hours has a little effect on both the absolute value and distribution of the above MESFET parameters.

#### Passive Components

By applying the same MLR structure reported in section 2 for passive component fabrication, base metallizations (typically Ti/Pt/Au) approximately 1  $\mu$ m thick can be deposited by the simple lift-off technique. This approach not only permits simultaneous electroplating of components and the realization of air-bridges by simple resist patterning, but above all permits to substitute a critical sputter etch or ion-milling process, and its inherent yield problems such as redeposition, end-point detection, reproducibility of line dimensions etc., with a simple blanket etch process with a corresponding notable improvement in yield.

In figure 7 we illustrate SEM photographs of some typical passive components realized with the above technology, where in particular: a) omega inductors with 30, 20 and 10  $\mu$ m wide and 5  $\mu$ m thick electroplated metallizations; b) spiral-inductor with 6  $\mu$ m high "air-bridge;" c) MIM capacitor with 300 nm thick Si<sub>3</sub>N<sub>4</sub> dielectric; and d) 3 X 3  $\mu$ m line/gap

interdigitated capacitor with 1  $\mu$ m thick metallization. In table 1 are presented some typical results obtained from d.c. characterization of these components. As illustrated, except for the very large MIM

capacitor (Area = 187 X 10<sup>3</sup>  $\mu$ m<sup>2</sup>) the overall yield of all the components realized was always better than 90 percent. Furthermore the mean value and standard deviation of each component, obtained from approximately 70 measurements uniformly distributed on each 2 inch

wafer, indicates that the on wafer tolerances are always better than  $\pm 5$  percent, and that the overall tolerances, which take into account the inherent variations of the different process runs, are typically  $\pm 7$  percent for most components; in fact only the interdigitated capacitor and the thin film resistors prove to be more critical with overall tolerances of  $\pm 13$  and  $\pm 15$  percent respectively.

#### MMIC Fabrication Yield

With the above technology, relatively high yield MMIC fabrication is possible. To illustrate this point we refer to a local oscillator for DBS applications, which by means of a dielectric resonator, is required to have a frequency stability of  $\pm 3$  MHz at a center frequency of 10007 GHz over a temperature range of -40 to 80 C.

An SEM photograph of said MMIC is illustrated in figure 8 and as shown it is composed of four technologically critical components, i.e.

- 0.6 X 300  $\mu$ m MESFET
- 4 nH spiral inductor with air-bridge
- 15 pF MIM bypass capacitor
- 25 pF MIM d.c. block capacitor

all interconnected by strip-lines and air-bridges. In evaluating the technological yield of this MMIC we have simply controlled the d.c. characteristics of the above components in each MMIC; for the MESFET the saturation current, the transconductance and the source-gate capacitance was measured. From approximately 80 MMIC'S (uniformly distributed) tested on each 2 inch GaAs wafer we typically find that more than 60 percent are in order, in agreement with what can be extrapolated from the technological yields of the individual components

(i.e.  $(0.90)^4 \approx 70$  percent).

In figure 9 we present typical r.f. characteristics of the MMIC's which passed the d.c. check; as shown by the frequency spectrum, for minimum noise performance conditions ( $Q_{ext} = 11000$ ) the oscillator is capable

of  $\sim 12$  dBm output power at 10007 GHz with frequency drift of better than 3 ppm/K from 5 to 70 degrees C. Because the electrical performance of this oscillator is not very sensitive on component tolerances we found that all MMIC's tested at r.f. satisfied the requested specifications thus ensuring an overall yield of better than 60 percent.

Even though this result may be slightly optimistic because the electrical performance of the MMIC in question is not very sensitive to component tolerances, it should be pointed out that before the introduction of the above technology the same MMIC had an overall yield



of only 5 percent.

### Conclusions

In this article we have outlined some of the key features of a technology which is capable of relatively high yield MMIC production. Said technology, based on a stringent control of active layer formation by ion-implantation and a multi-layer resist structure lithography to minimize photoresist and mask related losses, is found to give better than 60 percent overall yield for a local oscillator MMIC for DBS receiver applications.

Fig.5 Typical Selenia MESFET devices a) low-noise and b) power.

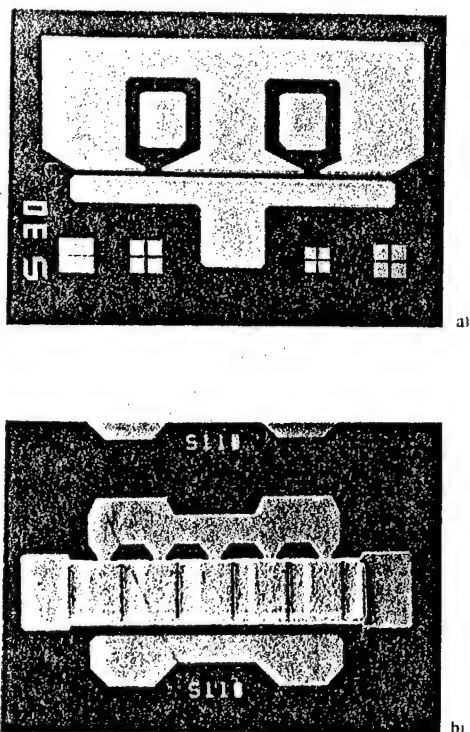


Fig.6 Histograms of approximately 80 measurements of  $I_{DS}$ ,  $C_{GS}$  and  $V_P$  uniformly distributed on a 2 inch GaAs wafer (shown schematically), before ( $\square$ ) and after storage at 200 C for 50 hours ( $\blacksquare$ ).

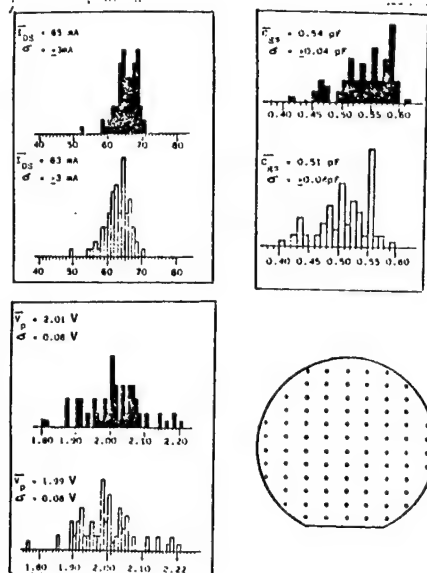


Fig. 7 Typical passive components a) omega inductor, b) spiral inductor, c) MIM capacitor and d) interdigitated capacitor.

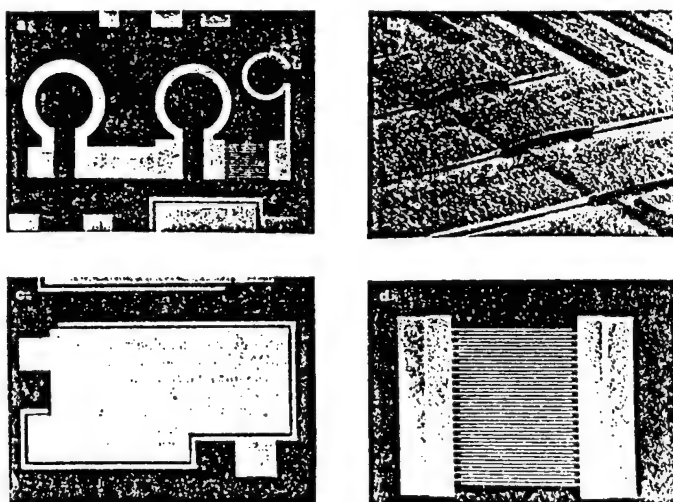


Table 1 Experimental values of passive components realised with the MLR technology together with their respective yield and overall tolerances.

Component	Experimental value				Overall tolerance
	Yield	Batch 1	Batch 2	Batch 3	
MIM capacitor ( $A = 187 \times 10^3 \mu\text{m}^2$ )	80%	$C = 54.5 \pm 1.1 \text{ pF}$ $G = 2 \mu\text{S}$	$C = 53.8 \pm 0.9 \text{ pF}$ $G = 2 \mu\text{S}$	$C = 56.2 \pm 0.8 \text{ pF}$ $G = 2 \mu\text{S}$	$\pm 7\%$
MIM capacitor ( $A = 37.6 \times 10^3 \mu\text{m}^2$ )	97%	$C = 10.7 \pm 0.2 \text{ pF}$ $G = 1 \mu\text{S}$	$C = 10.7 \pm 0.2 \text{ pF}$ $G = 1 \mu\text{S}$	$C = 11.1 \pm 0.2 \text{ pF}$ $G = 1 \mu\text{S}$	$\pm 7\%$
Interdigitated Capacitor	97%	$C = 0.65 \pm 0.02 \text{ pF}$ $G = 0.25 \mu\text{S}$	$C = 0.68 \pm 0.03 \text{ pF}$ $G = 0.25 \mu\text{S}$	$C = 0.70 \pm 0.02 \text{ pF}$ $G = 0.25 \mu\text{S}$	$\pm 13\%$
Spiral Inductor	100%	$L = 4.3 \pm 0.1 \text{ nH}$ $R = 1.57 \Omega$	$L = 4.2 \pm 0.1 \text{ nH}$ $R = 1.65 \Omega$	$L = 4.3 \pm 0.1 \text{ nH}$ $R = 1.61 \Omega$	$\pm 7\%$
Thin film Resistor (low)	92%	$R = 7.3 \pm 0.6 \Omega$	$R = 8.2 \pm 0.2 \Omega$	$R = 7.4 \pm 0.2 \Omega$	$\pm 7\%$
Thin film Resistor (high)	92%	$R = 114 \pm 5 \Omega$	$R = 132 \pm 3 \Omega$	$R = 121 \pm 5 \Omega$	$\pm 7\%$

Fig.8 MMIC of Local Oscillator for DBS receiver applications .

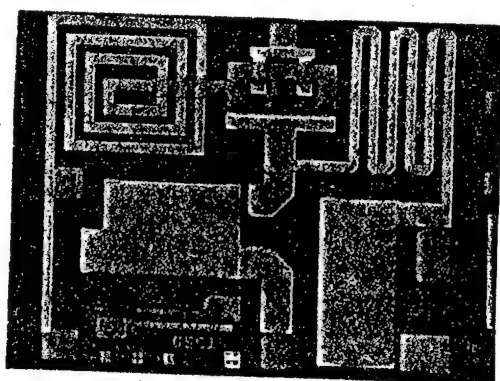
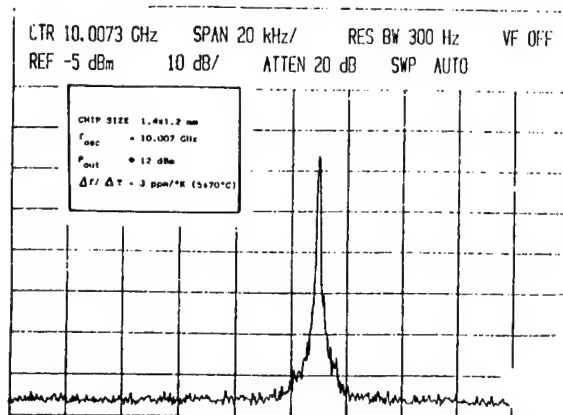


Fig.9 Frequency spectra and other typical performance characteristics of the monolithic L.O.



8600

CSO: 5500/M146

INTEGRATED SERVICES DATA NETWORK TO BEGIN IN 1989

Amsterdam DE VOLKSKRANT in Dutch 13 Dec 86 p 33

[Report on interview with Eng P. 't Hoen, acting executive director of PTT (Post, Telegraph and Telephone) Telecommunication, by Hans Friedeman: "ISDN: The Revolution of the Telephone"; date of interview not given; first paragraph is DE VOLKSKRANT introduction]

[Text] In 1989, the PTT will start initiating a revolutionary information system in the Netherlands: ISDN, or the Integrated Services Data Network. It will form part of a world-wide network which can process speech, text, images and computer data, all by way of the telephone network, in which zeros and ones flash through glass fibers. Hans Friedeman spoke with acting executive director of PTT Telecommunication, Eng P. 't Hoen.

While telephone traffic in the Western metropolitan area is almost daily starting to exhibit the same types of congestion as automobile traffic, the little gnomes of the PTT are, almost unnoticed, digging in the ground to supply the Netherlands with an entirely new communication network. Cables no longer consist of copper wire, but of glass fibers. And the human speech which traverses it is no longer being converted into rising and falling electric waves, but into combinations of zeros and ones which reconstruct the original voice sound at the other end. The analog world of every day is making place for the digital abstraction of the computer era.

The Dutch network of new digital glass fibers is growing with surprising speed. After Rotterdam, Amsterdam and The Hague, a special conglomerate network of glass fiber connections was completed in Utrecht, too, a few weeks ago. The old cables will still be used for the time being. That will ease the overburdened networks. But the demand for transmission capacity for all sorts of information continues to increase hungrily.

Only glass fiber cables and computers with their enormous capacity for digital information transmission and processing will be able to process the international growth of telecommunication in an affordable manner. By the year 2000, the Netherlands will have almost exclusively glass fiber cables, in the PTT's expectation. The analog telephone system will not have disappeared

completely by then, but it will clearly be on the way out. Instead, the new digital telephone will acquire a much broader function in the office and at home.

In the coming decade, this development will lead to an increasing integration of all sorts of services via the telephone network. When various types of information, such as speech, text, image and data, are digitized, thus converted into zeros and ones, the technical distinction between these types of information will disappear and all of them can be processed within one system. Through the telephone and a piece of equipment the size of a home computer, the user will be able to speak with someone else as well as exchange texts, drawings, figures and images, take care of his banking and transfer transactions, or call up information from all sorts of services.

This integrated information system is known as ISDN or the Integrated Services Digital Network. Internationally, it is the most discussed subject in the telecommunication world. Only yesterday the Dr Neher Laboratory of the PTT held a day-long symposium on the subject on the occasion of its 40th anniversary. Expectations are high for the new system. There is a general feeling that with ISDN the revolution toward the information society will finally be off to a really good start.

"There is a sort of expectation of eternal salvation by ISDN" says acting executive director of PTT telecommunication, Eng P. 't Hoen, in the office he recently moved to on the 18th floor of the "green tower." The fastest growing branch of the PTT, which is being privatized, recently moved to the glass high rise complex near the eastern access road in The Hague. As a technical person, 't Hoen tends to put the science-fiction-like image of ISDN somewhat into perspective, although he also emphasizes its many new possibilities.

The prior history of ISDN started already in 1971, when in the Utrecht district of Overvecht a computer-controlled subscriber exchange was installed on a trial basis. Without realizing it, the subscribers themselves operated the computer when they chose a number. Technically it was a very important experiment, for the system was partly analog and partly digital.

Later in the seventies a technique was perfected in which analog signals could be converted into digital signals. In this so-called pulse code modulation, the progressing wave-shaped "sausage" of the analog speech signal is cut into "slices" 8000 times per second. The size of each little slice is indicated by a series of 8 bits (zeros or ones) which together have a certain numeric value. To transmit the digitized speech signal, one thus needs a transport capacity of  $8 \times 8000 = 64000$  bits per second, or 64 kilobits per second.

The digitization of telephone traffic now opens up unprecedented possibilities. The flow of information translated into zeros and ones can even be divided into little packets which can be sent into the network supplied with an address and reference number. The small packets can each follow different free paths through the net, but they all arrive at the same address, where they are put into the correct order by the receiving computer in order to form the message that is being transferred.

The conglomerate networks of glass fiber cables which are now growing rapidly form part of the "master plan" which ultimately must lead to digitized connections from house to house and the integration of all sorts of services. The last little pieces [of cable] in the network present the greatest problems, however, says 't Hoen. Those are the connections from the exchanges to the subscribers. That is what the international ISDN operation is concentrating on now.

The digitization of the big telephone traffic network via glass fiber cables is economical, according to 't Hoen. That operation will pay for itself. But the digital subscriber connections are not yet paying for themselves. "Of the total investment of 17 billion [guilders] in the telecommunication network, about 40 percent, or 6 to 7 billion, is in those last little pieces of the local networks. Those last little pieces have an average length of 1.7 kilometers. Replacing those with glass fibers would be much too expensive as yet."

This is not a specific Dutch problem; it happens everywhere. The solution found by the international ISDN debate for the subscriber connection utilizes the existing cables. In the subscriber exchange, to explain it simply, there will be a little box which digitizes the information, and in the home a box which translates everything back to analog information.

The digital information flow which is sent over the cable has, by ISDN agreement, a capacity of 144 kilobits per second, divided over two channels of 64 kilobits per second each and a signaling- or auxiliary-channel of 16 kilobits per second. The Dutch subscriber network was initially set up with plenty of space to be able to easily process this flow of bits. The two main channels are intended for general use, the signalling channel for the expanding and controlling of the connection as well as for dispatching short messages. Thus someone who dials when the two main channels are occupied can make it known via the auxiliary channel that he has called.

Such a new provision for the telephone subscriber is marvelous, of course, but what will he do with it? With the exception of hobbyists, few private individuals will have a need for fast telex, fax or databank connections for the time being. New services in this area won't arise if the public has no need for it (yet).

It is obvious that the path to ISDN initially will have to be paved by industry. Here too, however, a big obstacle must be overcome, says 't Hoen. Initially, the making of ISDN connections will be an expensive activity, as long as the number of users is relatively small. Only with a strong increase in demand will costs go down. Moreover, as long as demand is low, very little new equipment will be developed to utilize the new possibilities. It is a chicken and egg problem. Who will initiate it?

Speech, text, image and data in one information system

"ISDN is a clear example of technological push," says 't Hoen. "It is a world-wide concept which is being stimulated by governments and economic communities such as the EC. Much more has to be developed as yet. The first

applications will not be cheap. But particularly in the medium-sized and small business markets, ISDN services will be able to expand through interaction between provisions by users and provisions in the network. That will facilitate overcoming the obstacle."

One application in which ISDN technology appears to be given one of its first chances is the fax equipment for the transmission of texts, graphs and drawings. "The use of fax is continually growing," says 't Hoen. "Last year it even doubled. It could grow even more rapidly if the quality and speed of faxing are increased. The old faxes were dumb. Now they can balance speed and resolving capacity against each other. They are becoming long-distance copying machines. With a transmission speed of 64 kilobits per second, they can transmit their texts and images 14 times faster than the fastest telephone modems now in use."

"The new ISDN technology will be very expensive during the initial period--about 5000 guilders per subscriber line. In mass production the prices will become much lower. It can be compared to compact disc equipment. Its laser originally cost 2000 guilders and [is] now only 30 guilders."

The introduction of ISDN will stand or fall with international standardization. Through the European PTT organization CEPT [European Conference of Postal and Telecommunication administrators], the Netherlands participates in the so-called NET standards (European Telecommunication Norms). The European standard, in its turn, must be compatible with that of the United States, Japan and other countries which want to introduce ISDN in the short term. In mid-1987, the international ISDN standard must be established. "In this, it is primarily a matter of the characteristics of the equipment at the connection points. Only when they are established can the producers start making their stuff," according to 't Hoen.

For the user, the ISDN equipment can consist of one apparatus which gives access to a range of services, varying from the ordinary telephone, text communication and electronic mail to services in which the user must identify himself, such as the message service Memocom, Viditel and electronic payment services (telebanking and teleshopping).

The Dr Neher Laboratory of the PTT has developed a terminal named DUET (DNL [Dr Neher Laboratory] Universal Terminal Unit) which can be used in the nineties as the basic unit for connection to ISDN. The unit has a telephone handset and a numeric keyboard. One can also freely telephone by hand via a microphone and loudspeaker. For transmitting and receiving texts there is also an alpha-numerical keyboard and a black and white screen. For identification and keying of data, a thin chip card ("smart card") can be introduced into the unit. External equipment, such as a personal computer, printer or color monitor, can also be connected to it.

Communication with the unit takes place by way of simple commands. The form of communication is selected with push buttons (SPEECH, TEXT, DATA, GRAPHICS or VIDEO) and the connection is made with the function key DO. When someone



from outside wants to transmit information, a note appears on the screen with particulars about the form (speech, text, etc.). The receiving party only needs to push the button GIVE to activate the connection.

It is still an open question whether the PTT terminal will become the generally used ISDN equipment. The European PTT's are very involved in privatizing and if ISDN should make any kind of impact on the consumer market, undoubtedly an enormous competitive battle will be unleashed between PTT's and other suppliers. The introduction of ISDN is, after all, a matter of a world market which, even for business use alone, is estimated to reach a volume of \$200 billion in the early 1990's. The market share of the EC in that amounts to 20 percent, or \$40 billion.

The Dutch PTT is getting ready to start with ISDN in 1989. According to a recently approved EC guideline, ISDN would have to achieve a penetration of 5 percent by 1993. That means that there would have to be about 270,000 ISDN connections in the Netherlands by that time. 't Hoen finds that greatly optimistic. He expects a calmer start, partly because of the considerable "cost obstacle" which must be overcome in the initial phase. But he has no doubts about the further growth of ISDN.

Besides Europe, the United States and Japan are also very involved in starting to play their role in the ISDN market. "The Japanese started on their own very early. They have experimented with providing services through closed television networks and the transmission of texts, and they have considerable experience with terminals. Those are very user-friendly. For example, they work with a sort of light pen with which they indicate the selection possibilities in the shape of 'icons.' That also fits in with their script."

The Americans originally were not interested in ISDN. "They thought it was really something for European technicians," says 't Hoen. "Now they are trying to join Europe, however. There are differences between the American and European ISDN systems, but solutions can be found for those. AT&T will do an initial experiment with ISDN in Chicago in February. There, the headquarters of McDonald's will get 300 ISDN lines. In the United States, ISDN is thus starting with hamburgers."

While ISDN is still in its infancy, thought is already being given to a so-called "broadband ISDN," says 't Hoen. With that is meant a system in which much larger bitflows than 64 kilobits per second can be processed. Actually, the glass fiber conglomerate networks which are now located around the four large cities with their capacity of 2 million bits per second (2 megabits/second) are really broadband networks. In the long run, the capacity of these large traffic networks can be increased to 140 megabits per second, depending on the expansion of the market.

"When you also replace the cables of the local networks by glass fibers, there will be additional possibilities for ISDN again," says 't Hoen. "Then you can also introduce the video telephone. I think that will become possible in the long term. Glass is cheap, after all. Through the much greater capacity for information transport, things such as the 'telenewspaper' and 'image bank' will also be in the offing."

"But what kind of meaningful information does the image of your discussion partner give when you are talking over the video phone? Siemens made a survey into the video telephone. It showed that such a unit, if it becomes twice as expensive as the current telephone, would be desired by only 15 percent of the subscribers. And what exactly are you getting yourself into? All the local telephone exchanges would have to be replaced!" Nevertheless, 't Hoen believes that the coming advance-investment in "narrowband" ISDN will ultimately lead to broadband ISDN.

It is still difficult, however, to survey the future possibilities and potential dangers of the new information system. "Take the privacy aspects, for example. Via ISDN one can shortly show by whom and from where you are being called. That's great to track anonymous telephone criminals, but it is not so nice for the businessman with a girlfriend who can no longer make his wife believe that he is still at the office."

"Actually," says the top man of the PTT, "so far we can barely assess where things are going. After all, most applications of ISDN still have to be discovered."

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CSO: 5500/2449

- END -